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BOSTON REDEVELOPMENT AUTHORITY

Planned Development Area No. 23 (Fan Pier)

Attachments

(Volume I of II)

Planned Development Area No 23 (Fan Pier) Attachments

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TO

MEMORANDUM DATED APRIL 23, 1987

FROM SUSAN ALLEN, PAUL MCCANN AND LINDA BOURQUE

TO THE BOSTON REDEVELOPMENT AUTHORITY AND STEPHEN COYLE

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FAN PIER

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RESOLUTION OF THE BOSTON REDEVELOPMENT AUTHORITY REGARDING FAN PIER DEVELOPMENT PLAN, PLANNED DEVELOPMENT AREA NO. 23

1. THE ONGOING BRA APPROVAL PROCESS

WHEREAS, HBC Associates (the "Applicant") is seeking from the Boston Redevelopment Authority (the "BRA") and the Boston Zoning Commission (the "Commission") the approval of a development plan for Planned Development Area No. 23 (the "Development Plan") in connection with a proposed mixed-use development (the "Project"). The Applicant is a joint venture of HT-Boston, Inc., a Delaware corporation, and Carpenter Fan Piers Limited Partnership, a Massachusetts limited partnership (successor to the interest of Carpenter Properties, Inc. in the Applicant). HT-Boston, Inc., an affiliate of Hyatt Corporation, is controlled by the Pritzker family of Chicago. The general partner of Carpenter Fan Piers Limited Partnership is FP, Inc., an affiliate of the Boston-based Carpenter and Company, Inc., which is controlled by Richard L. Friedman.

Section 3-1A of the Boston Zoning Code (the "Code") sets forth procedures for the designation by the BRA of planned development areas. Prior to this Project, the BRA has approved over twenty planned development areas, each involving a site of more than one but less than five acres. Because the site on which the Project is to be located (the "Site") includes more than five acres (in fact, 18.9 acres), a slightly different procedure, permitted by Section 3-1A, has been utilized for the first time.

Under this procedure, on January 16, 1986, the Applicant sought both approval of its master plan (the "Master Plan") which set forth, in accordance with Section 3-1A(a),

> a statement of the development concept, including the planning objectives and character of the development, the proposed uses of the area, the range of dimensional requirements contemplated for each of the proposed uses, the proposed phasing of construction of the development and such . . . other items . . . as said [BRA] may require. . . .

and designation of the Site as a planned development area. After a lengthy public hearing on February 12, 1986, the BRA approved the Applicant's Master Plan for the development of the Site and recommended designation of the Site as a planned development area. Again pursuant to Section 3-1A, the BRA then petitioned the Commission, which, after a public hearing, voted on March 21, 1986, to approve the Master Plan and the map amendment to the Code designating the Site as Planned Development Area No. 23. The Commission's action was approved by the Mayor on March 27, 1986.

Approval of the Master Plan constituted approval of the Project's general development concept, permitted uses, and a legally allowed density. Master Plan approval, however, did not constitute approval of a specific development plan. Instead, it led to the current stage of this ongoing public review process at which development plan approval is sought.

A development plan must contain certain elements (the "Plan Criteria"). Under Section 3-1A(a), it must:

> set forth the proposed location and appearance of structures, open spaces and landscaping, proposed uses of the area, densities, proposed traffic circulation, parking and loading facilities, access to public transportation, proposed dimensions of structures . . . .

A development plan establishes limits of development to be permitted in a project area and insures the provision of certain public amenities.

The Development Plan represents a stage in the planning process for this large-scale development project between the Master Plan and the stage at which the final plans and specifications are submitted to the BRA pursuant to Section 3-1A of the Code for final design review approval and certification as to consistency with the Development Plan.

After public hearing, the BRA may approve a development plan if it determines that it meets the Plan Criteria and that it

> conforms to the general plan for the city as a whole and that nothing in such plan will be injurious to the neighborhood or otherwise detrimental to the public welfare.

Even after the Development Plan is approved, the BRA review process will continue. All drawings and specifications will be subject to design review and approval by the BRA. In addition, in order to obtain a building permit, all final plans and specifications must be submitted to the BRA for a determination that they are consistent with the Development Plan. Such a determination may be made if the BRA finds that the final plans and specifications comply with certain essential elements defined

in the Development Plan as "Plan Requirements". If the final plans and specifications do not comply with the Plan Requirements, they cannot be approved unless the Development Plan is amended, after public notice and hearing.

2. THE PRESENT FAN PIER SITE IS A BLIGHTED, DECADENT AND OPEN AREA

WHEREAS, the site is located on the waterfront on Northern Avenue in South Boston, and is bounded by the Fort Point Channel, Boston's Inner Harbor, and a portion of Pier 3. The Site includes approximately 18.9 acres, approximately 16.3 acres of which are presently pier structure and land and 2.6 acres of which are below water. (A more precise description of the Site is contained in the Development Plan.)

At present, the Site is a blighted, decadent and open area and consists of a partially paved and cobblestone parking area (containing 1,500 surface parking spaces), a shed for the collection of parking fees, a one-story warehouse used for storage by Anthony's Pier 4 Restaurant, some old railroad cars, a one-story sandwich shop, and facilities for an excursion boat operation.

Currently, the Site area is an eyesore and grossly underutilized. It is an unattractive parking lot, which returns to the City virtually nothing in terms of tax revenue, employment or other public benefits. Except for commuters who daily use the parking area (and the patrons of the sandwich shop and the

excursion boat operation, which both exist on the periphery of the Site), the general public currently is totally excluded from this valuable waterfront area.

Since 1968, a number of attempts at private development of the Site have been undertaken. None have succeeded.

The BRA finds that, if the Development Plan is not approved, the Fan Pier will continue as a blighted, decadent and open area; that the existing structures and the Site's uses will remain essentially unchanged; and that the potential public benefits from this unique waterfront area will remain untapped.

3. THE APPLICANT'S DEVELOPMENT PLAN

WHEREAS, the Applicant's Development Plan consists of ten pages of text (including a Substitute Table A submitted at the public hearing), plus attachments designated Exhibits I through IV. The Applicant has also submitted to the BRA a Supporting Documentation Section and five reports, entitled "Transportation Impact and Access Plan," "Project Benefits," "Infrastructure," "Inner Harbor Ferry Feasibility Study," and "Urban Design," all dated March 16, 1987, as amended by a document entitled "Supplementary Report Information" dated March 30, 1987. Although these documents are not part of the Development Plan, they set forth additional information relating to the Project. Similarly, the Applicant has also submitted a proposed First Amendment to the Cooperation Agreement (the "First Amendment"). The BRA will not execute the First Amendment until it is satisfied that the First

Amendment will insure compliance with the Development Plan and the provision of the public benefits and mitigation measures referred to herein.

The BRA finds that the Applicant's Development Plan adequately sets forth the required elements or Plan Criteria of Section 3-1A, including the proposed location and appearance of structures, open spaces and landscaping, proposed use of the project Site, densities, proposed traffic circulation, parking and loading facilities, access to public transportation and proposed dimensions of structures.

4. THE PROJECT

WHEREAS, as described in the Development Plan, the Project is a first-class mixed-use development consisting of approximately three million square feet of residential, office, hotel, retail and cultural space to be contained in nine major buildings. The Project will also include more than 11 acres of recreational and other open space, including a marina.

The Project will extend Boston's downtown commercial and residential uses across the Fort Point Channel and thus accommodate the City's immediate need for controlled physical growth. The BRA finds that, without this extension, the City's growth will be severely limited by its relatively small and geographically confined financial district or that, alternatively, such growth may result in overburdening the financial district.

Testimony submitted at the public hearing by the Assistant Director of the BRA for Policy Development and Research further indicates the need to extend the financial district office market in order to accommodate the demand for such space in the future and to increase the provision of office-related employment in the city.

Cesar Pelli & Associates has provided a master design plan for the Project and has been selected to design several of the Project buildings. Mr. Pelli is the former Dean of the Yale University School of Architecture and an internationally recognized architect. In order to provide diversity within the general guidelines of Pelli's master design plan, several other distinguished architects have been selected to design individual buildings in the Project. This arrangement was described at the public hearing by a spokesman for the Boston Society of Architects, Fan Pier Focus Team as a "brilliant stroke."

The BRA finds that, from a design standpoint, the Project will extend the urban character of both South Boston and the downtown and provide distinctive public spaces. The BRA further finds that this is accomplished by taking advantage of the Site's two major attributes: its proximity to the downtown and its proximity to the water; that, in keeping with the traditional building materials employed in Boston, the facades of the Project's buildings will be constructed principally of patterned stone and brick; that a canal will be constructed to the north of

and parallel to the present Northern Avenue; that two vehicular/pedestrian bridges will cross the canal at Farnsworth and Pittsburgh Streets and two pedestrian bridges will also cross the canal; and that vehicular and pedestrian access to the Project will be by way of the existing Northern Avenue and a combination of proposed new streets.

The BRA finds that massing, setbacks and materials are coordinated to relate to those of the surrounding neighborhood, the downtown and the waterfront; that the Project will optimize its waterfront location through intensive treatment of water edges, the provision of water views, and continuous public access to the waterfront; that the buildings in the Project will have heights and gross floor areas not in excess of those permitted on Substitute Table A of the Development Plan; that, to achieve a reduced scale on the waterfront, the Development Plan restricts the tallest buildings, with the exception of the principal structure on the Hotel Lot, to those portions of the Site located along Northern Avenue and provides for buildings of reduced heights towards the water's edge and that Pelli's unified master design plan will form the basis for a cohesive ensemble of buildings.

Under the Code definitions of "floor area ratio" and "lot area", the construction of the canal, the Harborwalk, the street system and other public areas would result in increases in the floor-area ratio of the Project because such areas would be

excluded from the "lot area" upon which floor-area ratio is calculated.

The BRA finds that, in the calculation of floor-area ratio set forth in the Development Plan ("FAR"), it is appropriate to include these areas in the determination of lot area because the Applicant is setting aside these areas and providing at its own expense these substantial public benefits, including the street system. The calculation of FAR for this Project is set forth at pp. 3-4 of the Development Plan and establishes an overall maximum FAR of 4.25 and a maximum commercial office and retail FAR of 2.25.

5. THE PUBLIC REVIEW PROCESS AND EVOLUTION OF THE PROJECT

WHEREAS, the Fan Pier Plan is undoubtedly the most reviewed, studied and discussed project in the City's history. The public has been included throughout the review process. Moreover, the Project has changed in response to the concerns voiced during the public review process.

In 1981, a single, mixed-use master plan was prepared for the Fan Pier and Pier 4 sites. After extensive consultation with governmental agencies and consideration of public comments, the original master plan was withdrawn by the developers.

Each developer then selected a new architect to respond to the public concerns and the special characteristics of the individual sites. The architects delivered two new master plan

concepts, one for Fan Pier and one for Pier 4. The developers worked with governmental agencies to coordinate a cooperative, interagency review process at the various levels of government. In addition, the proponents sought input from public and private groups representing neighborhood, architectural, historical, Boston Harbor and commercial boating interests.

New master plans were submitted to the BRA and to the Citizens Advisory Committee (CAC), established in August, 1984 by the Mayor as a citizen review group for both projects. There have been more than seventy public meetings involving the CAC, the Harbor Park Advisory Committee, various groups with an interest in the Harbor and the waterfront, and the South Boston community. In addition, there have been more than thirty working sessions between the Applicant's development team and the BRA staff, including a number of senior-level, day-long planning and design sessions.

At the same time, the Secretary of Environmental Affairs has been carrying out a parallel public review process at the state level. As a result of the initial public review, changes were made in the Project and incorporated in the draft Environmental Impact Report ("EIR"), submitted to the Secretary of Environmental Affairs (the "Secretary") in December, 1985. On January 30, 1986, the Secretary issued a Certificate of Finding, concluding that the Draft EIR was in compliance with the Massachusetts Environmental Policy Act and regulations. The Secretary further noted:

> The Draft EIR prepared for this project goes well beyond both the breadth of coverage and the depth of detail that is customary in EIRs. By presenting a complete coverage of all planned and potential development in this [area], it provides a truly useful planning document to guide those decisions that must be made by the proponents and public decision makers in the coming months. . . . it evidences the proponents' commitment to a project that both meets their legitimate business aims and respects the public's legitimate rights in the waterfront. . . . it sets the stage for a successful private/public partnership to provide those transportation and infrastructure improvements necessary to support this and other proposed developments in South Boston while limiting the negative effects on the South Boston residential community and the remainder of Boston.

In November of 1986, a four-volume Final EIR was submitted to the Secretary. The Final EIR addressed traffic and parking, wind, shadow, water quality, air quality, noise, visual quality, tidelands, public access, infrastructure and construction impacts. The Secretary's Certificate on the Final EIR was issued on February 9, 1987. The Secretary found that the Final EIR met the statutory standard of adequacy and addressed the environmental impacts of the proposed development. The Secretary also requested additional information in the form of a Mitigation Analysis.

The BRA supported the Secretary's issuance of a Certificate on the Final EIR and the finding of compliance. Indeed, the facts and materials contained in the Draft EIR and in the Final EIR, which have been made part of the record herein, provide support for the BRA's findings herein.

The BRA finds that, as a result of these two-and-one-half years of citizen involvement and public review, numerous changes have been made in the Project. The BRA further finds that, out of this public review, through the diligent and good faith cooperation of the Applicant, a better Project has evolved.

6. THE "GENERAL PLAN FOR THE CITY AS A WHOLE"

WHEREAS, in approving a development plan, the BRA must find "that such plan conforms to the general plan for the city as a whole. . . ." No specific "general plan" is referred to in Section 3-1A or elsewhere in the Code.

On March 11, 1965, the BRA did adopt as the official master plan of the City for the next decade the "1965/1975 General Plan for the City of Boston and the Regional Core" (the "1965-1975 Plan"). In the intervening twenty-two years, no other formal city-wide plan has been adopted. Neither the 1965-1975 Plan, nor any other single document frozen in time, constitutes "the general plan" for the City. Rather, "the general plan for the City as a whole" is a continually evolving concept.

In determining "the general plan", it is the BRA's administrative practice to look to the 1965-1975 Plan and subsequent studies and actions relating to the particular part of the City under consideration. In this way, the BRA can determine if a particular project is in accordance with long-range planning and furthers the BRA's view as to future development of the City.

With regard to the Fan Pier Site and the Fort Point Channel area, the "general plan for the City as a whole" includes applicable portions of the 1965-1975 Plan and subsequent plans and studies, including a Fort Point Channel study (which examines the general Fort Point Channel area), a South Boston District Profile (which proposes a neighborhood improvement program for South Boston), and recently adopted and proposed Code amendments (which relate to the entire waterfront area).

In February, 1986, when the BRA granted master plan approval for this Project and the Pier 4 project and recommended the related map amendments, it was also expressing the BRA's long range planning goals. Thus, the Master Plan, the Pier 4 master plan and the related map amendments are part of "the general plan" as it relates to the Site.

The 1965-1975 Plan describes the City of Boston as including a Regional Core made up of a series of subcenters located along a linear spine generally running east to west. These subcenters are identified in the 1965-1975 Plan as North Station, the Waterfront, Government Center, Summer-Winter-Washington Streets, Park Square, Copley Square, Prudential Center, Symphony Hall, and Kenmore Square. The Plan envisions communication and connection between the Regional Core's separate subcenters to enable the subcenters to expand and modernize functionally as necessary.
Geographically, the 1965-1975 Plan defines the "Regional Core" as that part of the City which includes primarily the Boston

peninsula, plus various fringe areas, such as the Fort Point Channel Area.

Specific development concepts set forth in the 1965-1975 Plan which affect planning for the area in and around the Project include:

(1) Making fundamental physical improvements within the Regional Core without weakening its historic physical structure. Waterfront renewal is given as an example of the type of development which would accomplish this goal;

(2) Making improvements along the fringe of the Regional Core, in areas like Fort Point Channel, to improve the depressed land values and economic stagnation which then existed;

(3) Strengthening diverse residential areas especially near the Waterfront, through development which would be harmonious with its surroundings;

(4) Improving local circulation of traffic between neighborhoods and subcenters while eliminating unnecessary through-traffic;

(5) Integrating public open spaces with surrounding neighborhoods in the South Bay/Fort Point Channel Area;

(6) Developing the area near the intersection of the Harbor and the Fort Point Channel for recreational uses;

(7) Creating a system of open spaces and pedestrian ways in the Regional Core which links up existing public spaces, such as the Public Garden and the Common, with major bodies of water such as the Charles River and the Harbor; and

(8) Fulfilling the challenging opportunity presented by the Fort Point Channel Area for "bold new development and grandeur of design."

The BRA finds that, by turning the blighted, decadent and open land of the Site into a first-class mixed-use development, the Project will make improvements along the fringe of the Regional Core, will improve land values and will provide economic stimulus; that by the use of materials and designs which are harmonious with the surroundings and with traditional Boston design concepts, the Project will strengthen the waterfront area; that by its extensive open areas and Harborwalk segments and marina, the Project integrates existing public open spaces with the surrounding neighborhoods and develops recreational uses; and that the Project, designed by a group of locally and internationally prominent architects, clearly provides "bold new development and grandeur of design." The BRA further finds that, in spite of the passage of twenty-two years and Boston's greatly changed condition, the Project, as set forth in the Development Plan, is consistent with the development concepts contained in the 1965-1975 Plan.

Moreover, subsequent plans relating to the Fort Point Channel/Waterfront Area reveal an evolving "general plan" with which the Development Plan also conforms. A study sponsored by the BRA in December, 1977 entitled "The Fort Point Channel Area, A Planning and Development Study" (the "Study") envisions a development project on the Fan Pier which is a clear precursor of the Project proposed by the Development Plan. The Study anticipated that the area might become the site of one of the

largest public and private development programs in Boston's history.

The Study recognizes that the area, with its large vacant tracts in proximity to downtown and the waterfront, represents a valuable resource and stresses the importance of insuring that its development contributes to the City's goals. These goals include the following:

(1) to maximize the number of jobs suitable for Boston's resident labor force;

(2) to maximize property tax return for the City;

(3) to provide sites for uses that are important to the City and which are difficult to locate elsewhere; and

(4) to minimize requirements for new public facilities or services.

The Development Plan describes a Project which will help the City to meet these goals:

(1) the Project will create approximately 2,300 person years (or 4.75 million person hours) of construction work and 7,600 permanent jobs;

(2) the City will collect nearly forty times the existing annual tax revenue from the Fan Pier Site. The annual real estate taxes generated by the Project will increase from the existing $297,731 to approximately $12,000,000;

(3) the Project will provide unique facilities including a marina and canal, which by necessity must be located on the waterfront; and

(4) the Project will involve an unparalleled addition to the infrastructure of the City which will minimize the need for new public facilities or services.

The BRA finds that, while the Study, which was done a decade ago before the growth and movement of downtown office space towards the waterfront (e.g., Rowes Wharf) and Fort Point Channel (e.g., International Place), does not contemplate major office construction east of Fort Point Channel, the Development Plan otherwise closely conforms to the overall planning objectives set forth in the Study, including providing the necessary measures to mitigate any negative impacts on the South Boston residential community.

Furthermore, the Study discusses and finds appropriate an earlier proposed plan by Anthony Athanas for the Fan Pier-Pier 4 area, which anticipated a mixed-use development comprised of a hotel, residential buildings, office space, shops, restaurants, a marina and parking, and the Study contemplates the use of the planned development area process to resolve zoning problems confronting this type of mixed-use development. The Study also stresses the notion of encouraging public access to the waterfront through a system of open spaces and promenades.

The BRA finds that this Project is utilizing the planned development area process to accomplish the type of mixed-use development envisioned in the Study. Residential, office, hotel, retail, and cultural space will be contained in nine major buildings amidst a system of Harborwalks, parks and promenades which encourages public access to the waterfront.

In 1979, the BRA sponsored a neighborhood improvement program, entitled "South Boston, District Profile and Proposed

1979-1981 Neighborhood Improvement Program" (the "District Profile"), which proposes strategies for revitalizing South Boston. Included in the District Profile proposals are the encouragement of investment in housing, transportation improvements, the reuse of vacant underutilized land and the attraction of new residents and businesses to the neighborhood. The District Profile looks specifically to the development of vacant and underutilized land in the northern section of South Boston, which includes the Fan Pier, to produce large numbers of jobs and broaden the tax base. The District Profile postulates that more jobs and new uses on previously underutilized land can make South Boston an even more attractive place in which to live.

The BRA finds that the Project conforms to the strategies set forth in the District Profile. The BRA further finds that both construction and permanent jobs will be created by the completion of the Project; that tax dollars will be generated, new housing opportunities will be provided, and contemplated office and retail space will bring new business to the area; that various transportation improvements, such as the construction of a new Northern Avenue Bridge and a Seaport Access Road, are currently being pursued by state authorities; and that the Project will revitalize a large tract of vacant and blighted land in the northern section of South Boston and will constitute a major step toward accomplishing the overall goals for South Boston as set forth in the District Profile.

More recently, the BRA, pursuant to its role as the City's planning agency, has rearticulated the City's "general plan" for this area by approving the master plans for Planned Development Areas Nos. 23 and 24 on February 12, 1986. The approved master plans, in accordance with Section 3-1A, set forth planning guidelines for the Fan Pier and Pier 4 including: planning objectives, the character of development to take place, proposed uses, the range of dimensional requirements contemplated for each of the proposed uses, and the proposed construction program.

The approved Master Plan for Planned Development Area No. 23 contemplates that development of the Fan Pier will involve the construction of a mixed-use development consisting of office, residential, hotel and retail space, parking and recreational open space, and marine-related uses. The BRA finds that, in conformance with the articulation in the approved Master Plan, the Development Plan proposes a first-class mixed-use development consisting of residential, office, hotel, retail and cultural space to be contained in nine major buildings; and that at least 60% of the Site will be devoted to recreational and other open space, including a marina.

The most recent statements of the "general plan" for the waterfront are Article 27C of the Code, the Harborpark Interim Planning Overlay District (the "Harborpark IPOD"), and proposed Article 29 of the Code, the Waterfront Public Access Amendment. Although the Harborpark IPOD generally exempts all projects receiving prior planned development area designation and

specifically exempts Planned Development Area No. 23 from its scope, the Project is consistent with the purposes and general land use objectives stated in the Harborpark IPOD.

The general land use objectives stated in the Harborpark IPOD for the South Boston Piers include: utilization of the waterfront as a public resource, thereby extending its use and benefits to the greatest number of people; regulation of building height and massing so as to preserve access to the waterfront, scenic views and ocean breezes; promotion of a mix of uses which are compatible with the adjacent area and which improve the connection between the harbor and the land; preserving adequate areas for water dependent uses; and discouragement of conflicts between industrial and manufacturing uses and existing and anticipated public recreational, commercial, residential and light manufacturing uses in the South Boston Piers planning area.

The BRA finds that the Project will provide for continuous public access along, to, and from the water by extending the Harborwalk, which will include a boardwalk along the marina's edge and a public waterfront park adjacent to the Harborwalk; that the Development Plan is specifically designed to achieve a reduced scale along the waterfront by restricting taller buildings, with the exception of the principal structure on the Hotel Lot, to those portions of the Site located along Northern Avenue and providing for reduced heights towards the water's edge; that the incorporation of a canal on the Site provides waterfront views and waterfront access to the buildings located in the interior of the

Project and creates a major view corridor framing the Custom House Tower; and that, because the surrounding Fort Point Channel area offers predominantly industrial land uses, the Project infuses into the area a mix of commercial, residential, and cultural uses thereby creating an environment of mixed uses which promotes and improves the connection between these uses and the harbor.

The stated purposes of the Waterfront Public Access Amendment, which was proposed as Article 29 of the Code by the BRA, are to protect Boston Harbor; to promote a waterfront that is accessible, safe, comfortable, and inviting to all of Boston's residents and visitors; to encourage waterfront development that is respectful of Boston's heritage and sensitive to the public's need to use the waterfront; to enhance public access to Boston Harbor and its open space, recreational, residential, commercial and water-dependent industrial uses; to regulate new development along Boston's shoreline to assure that it compliments the existing scale and character of the waterfront; and to facilitate the renewed use and vitality of the Boston waterfront to benefit the greatest number of people. Pursuant to the proposed amendments, the standard to be employed by the BRA in determining that a waterfront development project meets a proper public purpose is (a) the extent to which the proposed project enhances the public's overall visual and twenty-four hour physical access to the waterfront; and (b) the extent to which the proposed project's public access is compatible with surrounding land uses.

Planned Development Area No. 23 is not included within the area subject to proposed Article 29. The BRA finds that, nonetheless, the Project fulfills the BRA's stated purposes in this latest articulation of "the general plan" as it relates to the waterfront area. The BRA further finds that the Project's system of Harborwalks, promenades, parks, and open spaces will provide twenty-four hour public access to the waterfront; that the surrounding land uses, which include office, hotel, retail and recreational uses, will encourage public access; that provision for a major public cultural facility on the Site offers an opportunity to attract the public which would permit a greater use of the proposed waterfront open spaces by Boston's residents and visitors and that the materials employed by the Project are intended to relate to the traditional masonry warehouses typical of the nearby Fort Point Channel District and compliment the existing scale and character of the waterfront.

The BRA further finds that the "general plan" is an evolving and changing concept; that it begins with the 1965-1975 Plan, which set forth general principles for the development of the City as a whole; that later studies and plans refine those principles and apply them to the development of the waterfront and Fort Point Channel areas; that the Project incorporates both the general principles and the specific refinements and that the Project "conforms to the general plan for the City as a whole."

7. THE PROJECT IS NOT "INJURIOUS TO THE NEIGHBORHOOD OR OTHERWISE DETRIMENTAL TO THE PUBLIC WELFARE"

WHEREAS, in order to approve the Development Plan, the BRA must find "that nothing in such plan will be injurious to the neighborhood or otherwise detrimental to the public welfare." Opponents of the Project contend that the Development Plan must be rejected if the Project creates a single adverse effect, even if that adverse effect is far outweighed by the Project's many public benefits.

This rigid interpretation would have resulted in the rejection of each of the more than twenty previously approved planned development area projects, since none of those projects is totally free from detriment. Such a result would be contrary to the very purpose of the planned development area process.

The planned development area provisions were intended to inject flexibility into the Code in order to encourage well-planned and thoroughly reviewed large development projects. The BRA cannot and will not destroy this flexibility and the planned development area process by adopting a new interpretation of the Code holding that any adverse effect on the surrounding neighborhood, no matter how slight or insubstantial, requires rejection.

Based on the legislative history of Section 3-1A and upon its consistent administrative practice for nearly two decades, the BRA will continue balancing a project's possible adverse effects and other matters claimed to be detrimental to the public welfare against the benefits to the neighborhood, the City, and the public. It will approve only those which, on balance, are not

"injurious to the neighborhood or otherwise detrimental to the public welfare."

In this instance, the possible detriments of the Fan Pier Project cannot be readily segregated from those of the Pier 4 project. Accordingly, for purposes of this balancing test, we will balance just the Fan Pier's public benefits against the combined detriments resulting from both projects.

The BRA finds that the record reflects numerous general and specific benefits to be provided by the Project. In addition to the general benefits cited earlier herein, including fulfillment of the important planning goals of the City in general and of this area in particular, selected specific benefits are noted below in the areas of jobs and procurement, housing, increased tax revenues, recreational and open space, a new cultural facility, and infrastructure improvements. The First Amendment sets forth the Applicant's commitment to provide many of these benefits, as well as numerous others.

The Project's Benefits

Jobs and Procurement

The Project will generate approximately 2,300 person years (or 4.75 million person hours) of construction work. There was testimony at the public hearing that this will generate approximately $140 million in wages, $14 million in health benefits, $28 million for pension funds, and additional funds for job apprenticeship training (apart from the developer's job

linkage payments). The Project will also generate approximately 7,600 permanent jobs.

The Applicant and the BRA have entered into a Development Impact Project Agreement which requires the Applicant to provide additional linkage of $1.00 per commercial square foot (or approximately $2,145,000) earmarked for job training. (This Project and the Pier 4 project are among the first in the City which will provide such additional linkage). It is expected that these jobs linkage payments will, among other things, support a pre-apprenticeship program providing assistance to persons seeking to become union apprentices.

The Applicant has agreed that, prior to issuance of a building permit for the Project's first building, it will submit a Boston Residents Construction Employment Plan, which will set forth its plans for insuring that the contractors for the Project will reserve at least 50% of the total employee worker hours in each trade for Boston residents; at least 25% of the total employee worker hours in each trade for minorities; and at least 10% of the total employee worker hours in each trade for women.

The Applicant also has agreed that, prior to the issuance of a building permit for the Project's first building, it will submit an Employment Opportunity Plan which will provide for the Applicant's good faith efforts to achieve a goal that 50% of the permanent employment opportunities created by the Project will be made available to Boston residents, including residents affected by the Project.

The Applicant will provide $146,000 in payments to be made to the Mayor's Office of Jobs and Community Services. These payments, which will be made on terms agreed to by the BRA and the Applicant, will be used for the implementation and oversight of a South Boston Job Stop to insure that Boston residents, and South Boston residents in particular, are notified, recruited and prepared for new permanent job openings created by the Project.

The Applicant will establish a Minority Business Enterprise Program promoting participation by minority business enterprises in the construction and operation of the Project and will use good faith efforts to obtain a goal of 10% participation by minority business enterprises in purchasing and contracting for the Project. The Applicant will cooperate with the Mayor's Office of Jobs and Community Services toward a goal of maximizing employment benefits, particularly for South Boston, through participation in a Boston for Boston Agreement applicable to the Project. The Applicant will also implement an outreach program for South Boston and local businesses and stores to give preference to such businesses and stores as tenants in the Project on competitive terms and conditions.

Housing

The BRA is seeking to develop at least 5,000 residential units in Boston by 1990 in order to meet the severe housing shortage which is plaguing the City.

As the Supporting Documentation Section indicates, the housing market in Boston is one of the strongest in the nation, with vacancy rates of 0-2% in some locations. New proposals for housing development in Boston fall short of projected demand.

The Project will help reduce this housing deficit by producing residential units near the downtown area, where the housing shortage is particularly acute. The Project will provide to the City more than 800,000 gross square feet of residential buildings on Fan Pier, including 100 affordable housing units on the Site. Furthermore, portions of the Applicant's linkage housing funds may be made available to assist in the creation of up to 150 additional affordable housing units and 40 units of artists live/work space on adjoining or nearby sites.

It is estimated that more than $10.7 million, in the form of housing linkage, will be available for creating affordable housing on the Site and throughout the City. (When combined with the approximately $2.1 million in jobs linkage payments, this brings the Project's total linkage payments to approximately $12.8 million).

The Applicant will market its housing units in accordance with the City's Fair Housing Plan and submit an Affirmative Fair Housing Marketing Plan acceptable to the Boston Fair Housing Commission and the BRA prior to entering into any sales or rental agreements for such housing units.

No existing households will be displaced by the Project. In view of the minimal use to which the Site is currently put, there

is no need for off-site relocation of the businesses currently operating on the premises.

Increased Tax Revenues

The City will collect nearly forty times the existing annual tax revenue from the Fan Pier when the Project is completed. It is estimated that real estate taxes generated by the Project, once completed, will increase from the existing $297,731 to approximately $12,000,000.

In addition, the City and the Commonwealth of Massachusetts can expect a substantial increase in sales taxes, including new retail sales, food and beverage sales and hotel room taxes.

Recreational and Open Space

The Project will include over 11 acres of recreational and other open space, including a marina. At least 60% of the Site will be devoted to publicly accessible areas.

The Project includes five major open spaces: (1) a Harborwalk along the water's edge, (2) a waterfront park adjacent to Harborwalk, (3) an oval near the center of the Project, (4) a Harborwalk overlook adjacent to the central oval and Harborwalk, and (5) a canal with canal promenades lining its edges. (These proposed open spaces are shown on Exhibit IV, attached to the Development Plan.)

The Project will extend the BRA's Harborwalk and will provide a natural environment in which pedestrians can view the activities in the harbor. The Harborwalk will include a boardwalk along the marina's edge and a public waterfront park adjacent to the Harborwalk. An oval located in the center of the Site will open onto a Harborwalk overlook at the water's edge. The canal, running east and west across the Site, will introduce additional water views to the Fan Pier.

New Cultural Facility

Provision will be made for a major public cultural facility located on the Site. The developers will donate a subleasehold interest in a building site expected to be the location of a new facility for The Institute of Contemporary Art.

This museum would be the first new major cultural facility to be built in Boston in more than seventy years.

Infrastructure Improvements

The Project also involves an unparalleled addition to the infrastructure of the City through private funding. In addition to the public spaces to be provided, the Project will include the expansion of the street system and the construction of two pedestrian bridges and two vehicular/pedestrian bridges. A new stormwater drainage system will be constructed by the Applicant on the Site which will mitigate water pollution in the Harbor from stormwater runoff, thereby improving Boston Harbor water quality.

The Applicant and the developer of the Pier 4 project will construct, at their expense, all water and sewer facilities that are directly related to the Project and the Pier 4 project and that are necessary to tie such projects into the Boston Water and Sewer Commission system. As part of this commitment, the Applicant and the developer of the Pier 4 project will reconstruct certain existing sanitary sewer facilities in existing Northern Avenue. The Applicant, together with the developer of the Pier 4 project, will meet the 2:1 infiltration and inflow goal by a combination of on-site and off-site improvements.

Alleged Detriments And Their Mitigation

Opponents of the Project have alleged that because it will increase the load on the City's overburdened sewer system, the Project will contribute to increased pollution of the Harbor. This allegation is not true. As the Boston Water and Sewer Commission, the agency both directly responsible and most knowledgeable concerning the sewer and drainage problems in the area, has noted in its February 2, 1987 comment letter to Secretary Hoyte on the Final EIR:

> The proposed sewer, water and drain system improvements to be undertaken by the Fan Pier/Pier 4 proponents will contribute to the betterment of BWSC areawide services and will help contribute to the improvement of water quality in Boston Harbor. (Emphasis added.)

As the Applicant's report entitled "Infrastructure"

demonstrates, the Project will reduce "combined sewer overflows" by reconstructing a portion of the North Branch of the South Boston Interceptor at A Street and by other measures, including the attainment of the 2:1 infiltration and inflow goal. The Applicant will also improve water quality by building, at its expense, a storm drainage system that will treat surface drainage to minimize the discharge of pollutants into the Harbor. (The Site currently lacks any storm drainage system with the result that discharge of gas and oil from the 1,500 automobiles currently parked on the Site is carried by runoff directly into the Harbor).

Critical regional problems, such as the cleanup of the Harbor, will not be solved by a single project, even with massive infrastructure improvements of the type committed to by this Applicant. Nonetheless, while the relevant governmental agencies work with the community to solve these regional problems over time, reasonable development must continue, so long as it is undertaken with extensive mitigation procedures of the sort planned for this Project.

The Project will improve, not worsen, water quality. For this reason, the Project should not be delayed pending various off-site, governmentally funded measures to improve the region's sewer system and water quality in the Harbor.

Transportation

Various concerns have been expressed regarding the traffic

problems associated with the Project. The Applicant and the BRA have addressed those concerns.

The developer prepared a Transportation Access Plan ("TAP"), coupled with an acceptable monitoring and mitigation plan. This was submitted to the BRA on March 16, 1987. The TAP describes the use of the existing roadway, parking and transit facilities serving the South Boston area, characterizes existing state and city plans for upgrading these systems and facilities, assesses the effects of the Fan Pier and Pier 4 developments on existing and future transportation systems in 1995 (the proposed completion date for the developments) and examines measures to mitigate adverse impacts.

The TAP sets forth a monitoring program for the Fan Pier and Pier 4 projects and establishes goals with regard to PM-peak hour outbound vehicle trips from the Project and delays encountered at six locations in the vicinity of the Project.

The TAP identifies measures which may be necessary to mitigate adverse transportation impacts. Some systems in the area will be able to absorb the cumulative growth from all developments and still maintain acceptable service. Others will be handling volumes at or in excess of their capacity during the peak hours unless mitigation measures are implemented.

The BRA has worked closely with the Applicant in arriving at possible mitigation measures. While many of the specific suggestions to relieve transportation impacts are dependent upon actions by governmental agencies, the developers have evidenced a

clear commitment to work with the City and Commonwealth to insure that a meaningful program of mitigation actions is identified and implemented. In addition, many of the specific mitigation measures are set forth in the First Amendment. For example, if necessary to meet transportation goals in the area, the issuance of building permits for the superstructure of certain buildings in the later portions of the project may be deferred in accordance with the First Amendment to the Cooperation Agreement. In addition, under certain traffic conditions, specified payments are required to be made to the Authority for use by the Boston Transportation Department in implementing traffic mitigation measures.

The TAP also considered the impact of construction activities. Construction will not significantly change current traffic conditions. Nonetheless, the Applicant will undertake certain mitigation measures to insure that any change will be beneficial. These measures will insure, among other things, that the South Boston community is protected from the dangers of excessive construction truck traffic.

A monitoring and mitigation program will be necessary to measure future site-generated traffic and future roadway volumes. In this way, the TAP can be updated so that it may reflect and respond to conditions as they change over time. Because it cannot now be predicted with certainty which mitigation approaches will be most successful, the ongoing monitoring and mitigation program

is the best means of assuring that the developers and City and state agencies can respond creatively to traffic problems.

The TAP also requires the formation of a Transportation Management Association which will be responsible for monitoring site generated traffic and area roadway volumes and for reporting the results to the City. This Transportation Management Association will be the first of its kind in Boston and will greatly facilitate the mitigation of traffic impacts.

In order to promote and support the creation of an Inner Harbor water transportation system, the Applicant will agree to take the following steps: (i) provision of planning and feasibility studies for water transportation systems in Boston Inner Harbor and (ii) cooperation with private and public entities in the provision of water transportation service for commuters, airport users and tourists in Boston Inner Harbor through (a) construction and management on the Site of a water shuttle dock and excursion boat landing, (b) landside water transportation facilities, including waiting space, ticketing and public restrooms, and (c) initial operation of, or a comparable funding commitment for, a water shuttle between the Project and Logan Airport.

Continuing Mitigation Measures

The issues relating to potential traffic and infrastructure impact of the Project are complex and not subject to easy solutions. The Applicant has diligently and commendably addressed

these issues and has been a full participant (and often a catalyst) in a joint effort now underway with the City, state and federal governments to plan for this new era in Boston's development. As noted above, the Cooperation Agreement and the First Amendment to the Cooperation Agreement, when executed, will insure that these mitigation efforts continue.

The Balancing of Public Benefits and Alleged Detriments

The BRA has sought the advice of the CAC as an aid in balancing the Project's possible adverse effects and other matters claimed to be detrimental to the public welfare against the Project's benefits to the neighborhood, the City, and the public. The CAC, whose membership represents a broad array of constituencies throughout the City and includes many individuals who live and work in South Boston, is uniquely qualified to balance the claimed detriments of the Project against its benefits. The members of the CAC are intimately familiar with the area surrounding the Project and are thus able to assess the Project's more subtle impacts. Through numerous meetings, the CAC has actively participated in the planning of the Project and in formulating the commitments by the developer to provide various public benefits. After lengthy consideration of the Project at these numerous meetings, the CAC has recommended that the BRA approve the Development Plan.

The Appropriate "Neighborhood"

In carrying out the balancing test of public benefits and detriments required by Section 3-1A, the BRA must consider the appropriate "neighborhood."

Most narrowly, the "neighborhood" in this instance might be defined as the Northern Avenue Corridor. Using that narrow definition, the BRA finds that the Project's benefits clearly outweigh the combined detriments of the Fan Pier and Pier 4 projects. The BRA further finds that replacement of a decadent, blighted open area with a first class, multi-use Project, combined with the significant open space and recreational opportunities and the enhancements of the local infrastructure (the most localized of the Project's benefits), outweigh the increase in local traffic, particularly in view of the required monitoring and mitigation of traffic impacts by the Applicant, and the other alleged localized detriments such as parking, wind, shadow, noise and visual quality.

The BRA further finds that, if the "neighborhood" is defined to include the W-2D zoning district in which the Project is located and the immediately adjoining I-2 and W-2 zoning districts, the balance between the Project benefits and the combined detriments of the Fan Pier and Pier 4 projects is not altered.

Although the Project is more than one-half mile from the nearest residentially zoned neighborhood (the Commercial Wharf

area), and more than three quarters of a mile from the nearest residentially zoned neighborhood in South Boston, perhaps the broadest definition of "neighborhood" might include all of South Boston. Similarly, such an expanded concept of "neighborhood" might also include the financial district and the waterfront. The BRA finds that, if this still broader definition of "neighborhood" is adopted, the benefits to be derived from the Project, in addition to those benefitting the Northern Avenue Corridor and the adjoining zoning districts, increase to include affordable housing, construction jobs, permanent jobs, additional annual real estate taxes, recreational facilities and new public open spaces; that this broader "neighborhood" will suffer no additional detriment beyond those experienced by the Northern Avenue Corridor; and that, with this broader definition of "neighborhood", the balance tips even further in the Project's favor.

Opponents have charged that the Project will add an incremental burden to the sewer facilities serving the entire metropolitan region. The BRA finds that, even if this were so, the Project's public benefits to the neighborhood (regardless of definition) and to the public welfare far outweigh the combined detriments of the Fan Pier and Pier 4 projects, even including this slight alleged incremental detriment.

Enlargement of the "neighborhood" to include even the entire City does not change the outcome of the balancing test.

Accordingly, the BRA finds that the Project is not "otherwise detrimental to the public welfare."

8. CONCLUSION

WHEREAS, the BRA gave due notice of a public hearing to be held in Faneuil Hall on March 24, 1987, to consider the Development Plan and to determine the manner in which Section 3-1A should be applied to the Development Plan. At the public hearing, the BRA heard extensive testimony from approximately fifty witnesses. The BRA considered thirty-two Exhibits submitted by the Applicant at the public hearing. The BRA also considered written comments and rebuttals received during a nine-day period following the public hearing. The BRA also considered written comments from the CAC and the Harborpark Advisory Committee. The BRA closed the public hearing and the public record on this Application on April 2, 1987.

Based on all this evidence, the BRA finds and concludes that the Project is critically important to the revitalization of the Boston Harbor waterfront; that the urban design elements of the Project reflect the urban waterfront context of the Site, while respecting the public goals and guidelines established for waterfront development in Boston; that the Project will form an important link between South Boston neighborhoods and the Inner Harbor; that the Project will also spread eastward across Fort Point Channel the rehabilitation of the waterfront that has already occurred at sites such as Long Wharf and Rowes Wharf;

that, in addition, the Project will greatly facilitate the completion of the BRA's Harborpark and Harborwalk proposals; and that the Project will aid the City financially by generating jobs, and by providing Boston with a new source of real estate tax revenues and linkage funds.

Based on all the evidence, the BRA further finds and concludes that the Project's Development Plan satisfies the Plan Criteria and otherwise complies with Section 3-1A.

Based on all the evidence, the BRA further finds and concludes that the Project's Development Plan "conforms to the general plan for the city as a whole."

Based on all the evidence, the BRA weighs this Project's public benefits against the combined detriments of this Project and the Pier 4 project and further finds and concludes that the Project's Development Plan is not "injurious to the neighborhood or otherwise detrimental to the public welfare."

9. RESOLVES

THEREFORE, be it resolved that:

> In connection with the Development Plan for Planned Development Area No. 23 presented at a public hearing duly held on March 24, 1987, and after consideration of (a) the evidence presented at, and in connection with, that hearing, including the 32 exhibits that were introduced into the hearing record and the letter dated April __, 1987 from the Chairman of the Fan Pier/Pier 4 Citizens Advisory Committee to the Chairman of the Authority, (b) matters discussed in a memorandum dated April __, 1987 from the Boston Redevelopment Authority (the "Authority") staff to the Authority, and (c) the findings of the

Authority set forth above, which evidence, memorandum and findings are incorporated herein by reference, the Authority finds that said Development Plan (1) conforms to the general plan of the City of Boston as a whole, (2) contains nothing that will be injurious to the neighborhood or otherwise detrimental to the public welfare, and (3) does adequately and sufficiently satisfy all other criteria and specifications for a development plan for a planned development area subdistrict as set forth in the Boston Zoning Code, as amended. Said Development Plan for Planned Development Area No. 23 is embodied in two written documents entitled (1) Development Plan for Planned Development Area No. 23 dated March 16, 1987 consisting of ten pages of text and tables plus attachments designated Exhibits I through IV and included in a document entitled Development Plan and Application with Supporting Documentation for Planned Development Area No. 23 dated March 16, 1987 and (2) Substitute Table A for Development Plan for Planned Development Area No. 23 Contained in Development Plan and Application with Supporting Documentation for Planned Development Area No. 23 dated March 23, 1987; said documents are attached hereto as Exhibits A and B respectively and shall be on file in the office of the Director of Zoning of the Authority.

THEREFORE, be it resolved that:

The form and substance of said Development Plan for Planned Development Area No. 23, and the procedures employed in reviewing and approving said Development Plan, conform with the requirements of the Boston Zoning Code as applied to a development plan affecting all or a portion of a planned development area designated by the Boston Zoning Commission under Section 3-1A of the Boston Zoning Code pursuant to a master plan for such area.

THEREFORE, be it resolved that:

Pursuant to the provisions of Section 3-1A, of the Boston Zoning Code, as amended, the Authority hereby approves said development Plan for Planned Development Area No. 23.

THEREFORE, be it resolved that:

> The Authority hereby authorizes the Director of the Authority to petition the Boston Zoning Commission for its approval of said Development Plan for Planned Development Area No. 23 and to execute in the name of and on behalf of the Authority a First Amendment to the Cooperation Agreement for Planned Development Area No. 23 in substantially the form attached hereto as Exhibit C, with such changes as the Director determines to be necessary or desirable, his execution thereof to be conclusive evidence of such determination.

Date: April , 1987

Respectfully submitted,

Stephen Coyle, Director

COMMONWEALTH OF MASSACHUSETTS

SUFFOLK, SS. Boston

Then personally appeared before me the above-named Stephen Coyle, Director of the Boston Redevelopment Authority, who executed the foregoing instrument and acknolwedged the same to be his free act and deed.

Notary Public

My Commission expires

BOSTON REDEVELOPMENT AUTHORITY

March 16, 1987

DEVELOPMENT PLAN
for
PLANNED DEVELOPMENT AREA NO. 23

FAN PIER PROJECT

Bounded by Fort Point Channel,
Boston Harbor, Northern Avenue
and Planned Development Area No. 24

Development Plan: On February 12, 1986, the Boston Redevelopment Authority (the "BRA") approved a master plan (the "Master Plan") for the development of the Fan Pier in South Boston (the "Project") pursuant to section 3-1A of the Boston Zoning Code (the "Code"). Acting in response to a petition from the BRA, the Boston Zoning Commission (the "BZC") voted on March 21, 1986 to approve a map amendment to the Code designating the Fan Pier as Planned Development Area No. 23. The Zoning Commission's action was approved by the Mayor on March 27, 1986. In accordance with section 3-1A of the Code, this Development Plan sets forth information on the Project including the proposed location and appearance of structures, open spaces and landscaping, proposed uses of the Project site, densities, proposed traffic circulation, parking and loading facilities, access to public transportation and proposed dimensions of structures (the "Development Plan"). As a result, this Development Plan represents a stage in the planning process for a large-scale development project between the Master Plan stage and the stage at which final plans and specifications for the Project (the "Final Plans and Specifications") are submitted to the BRA pursuant to Section 3-1A of the Code for final design review approval and certification as to consistency with this Development Plan. This Development Plan consists of ten pages of text and tables plus attachments designated Exhibits I through IV. All references to this Development Plan contained herein shall pertain only to such ten pages and attachments.

Developer: The developer of the Project is HBC Associates, a joint venture of HT-Boston, Inc., a Delaware corporation, and Carpenter Fan Piers Limited Partnership, a Massachusetts limited partnership (successor to the interest of Carpenter Properties, Inc. in HBC Associates), its successors and assigns. HT-Boston, Inc., an affiliate of Hyatt Corporation, is controlled by the Pritzker family of Chicago. The general partner of Carpenter Fan Piers Limited Partnership is FP, Inc., an affiliate of the Boston-based Carpenter & Company, Inc. which is controlled by Richard L. Friedman. Within the City of Boston, an affiliate of FP, Inc. was co-developer and is co-owner of 175 Federal Street. Neither HT-Boston nor its affiliates has any other current or former projects in Boston.

Site Description: The Project will be located within the parcel of land described in Exhibit I attached to this Development Plan (the "PDA Area"). The PDA Area includes the northern half of the existing Northern Avenue, approximately 50 feet in width, as it abuts Piers 1, 2 and a portion of Pier 3. It is anticipated that the existing Northern Avenue will be narrowed and that the resulting remnant parcel along the northern side of this roadway will be purchased from the City by Anthony's Pier Four, Inc. and subsequently ground leased to the developer. In anticipation of these events, the boundary of Planned Development Area No. 23 (as approved by the BRA, the BZC and the Mayor), and the area included in the PDA Area, has been extended to the centerline of the existing Northern Avenue. The northernmost 15-foot-wide strip of Northern Avenue as it abuts Piers 1, 2 and a portion of Pier 3 is referred to herein as the "Remnant Parcel". The PDA area, less that portion of Northern Avenue not included in the Remnant Parcel, is referred to herein as the "Site." The area on which the Project is eventually constructed, whether or not the Remnant Parcel is acquired from the City and included in that area, is referred to herein as the "Project Area."

Proposed Location and Appearance of Structures: Nine major buildings will be constructed in the Project Area. Five of the buildings, to be located on the parcels designated as Lots A through E on the plan attached to this Development Plan as Exhibit II, will be located to the south of the canal that will traverse the site from east to west. The remaining four buildings, to be located on the parcels designated as Lots F through H and the Hotel Lot on the plan attached to this Development Plan as Exhibit II, will be located to the north of the canal. The proposed locations of the major buildings in the Project are shown on Exhibit II. The locations of these buildings are provided on Exhibit II for illustrative purposes only. The locations and configurations of the structures set forth in the Final Plans and Specifications shall conform to the Plan Requirements as hereinafter defined.

The buildings in the Project Area shall have heights and gross floor areas not in excess of those permitted on Table A of this Development Plan. To achieve a reduced scale on the waterfront, the Project's buildings as a group will, with the exception of structures on the Hotel Lot, have reduced heights towards the water's edge. Aligned building setbacks and horizontal articulations will help to create a cohesive ensemble of buildings. In keeping with the traditional building materials employed in Boston, the facades of the Project's buildings shall be constructed principally of patterned stone and brick. The elevations attached to this Development Plan as Exhibit III illustrate the general appearance of the structures presently proposed for the Project. These elevations are provided for

illustrative purposes only. The appearance of the structures set forth in the Final Plans and Specifications shall conform to the Plan Requirements as hereinafter defined.

Proposed Open Spaces and Landscaping: The Project includes five major open spaces: (1) Harborwalk along the water's edge, (2) a waterfront park adjacent to Harborwalk, (3) an oval near the center of the Project Area, (4) a Harborwalk overlook adjacent to the central oval and Harborwalk, and (5) the canal with canal promenades lining its edges. These proposed open spaces are shown on Exhibit IV attached hereto.

The Fan Pier segment of the BRA's Harborwalk will extend along the entire western, northern and eastern waterfront of the Project Area and will provide a natural environment in which pedestrians can view the activities in the harbor. The Harborwalk will include a boardwalk along the marina edge. The public waterfront park adjacent to Harborwalk will afford a large waterfront open space for public use. Located in the center of the Project Area, the oval will serve as an attractive terminus to Pittsburgh Street and will open out onto a Harborwalk overlook at the water's edge. The canal, running east and west across the site, will introduce additional water views to the Fan Pier. Pedestrian walkways lined with stores and restaurants will parallel the canal. The canal will be aligned with the Custom House Tower in downtown Boston, commanding views of this historic landmark for most of the length of the canal promenades and visually integrating the Project with Boston's historic downtown. The landscape design in the Project Area will reinforce the view corridors established by the street grid and building walls. Trees and other plantings will be employed to soften the pedestrian environment. A variety of paving and landscape materials will be used to differentiate and enrich the promenades, paths and walkways throughout the Project.

Proposed Uses of the Area: The uses proposed for the Project Area include residential, retail, office, hotel, marina, recreational and associated uses. The principal uses proposed for each lot in the Project Area are set forth in Table A.

Proposed Densities: The underlying zoning district for the Site is W-2, Waterfront Industrial, with a maximum floor area ratio ("FAR") of 2.0, based upon Code definitions. Under the Code definitions of "floor area ratio" and "lot area", the construction of the canal, the street system and other public areas will result in increases in the FAR for the Project because such areas are excluded from "lot area" upon which FAR is calculated. This Development Plan establishes an overall FAR of 4.25 based upon the ratio of (a) 3,102,593 gross square feet of proposed development

(not including the gross square footage of any cultural facility that may be located on Lot E, the 50,000 gross square feet permitted in order to allow the developer to satisfy its Affordable Housing Commitment as defined herein and the gross square footage of the parking facilities) to (b) 730,022 square feet consisting of 712,622 square feet of existing pier structure and land (including the Remnant Parcel whether or not acquired from the City, which Remnant Parcel contains 18,372 square feet) and 17,400 square feet of boardwalks and pier structures to be constructed as part of the Project (together, the "Overall FAR Area"). This Development Plan also establishes a maximum FAR for the commercial office and retail components of the Project of 2.25 based upon the ratio of 1,627,848 square feet of the maximum proposed commercial office and retail development (not including up to 50,000 gross square feet permitted to allow the developer to satisfy its Affordable Housing Commitment) to the Overall FAR Area. The division of the Project Area into a number of zoning lots to facilitate financing may result in a higher FAR for some components of the Project when analyzed separately, provided that in the aggregate the Project conforms to the overall FAR and the commercial office and retail FAR established above.

Proposed Traffic Circulation: Two vehicular/pedestrian bridges will provide automobile access to the portion of the Project Area north of the canal. Pedestrians will have access to the portion of the Project Area to the north of the canal by way of these vehicular/pedestrian bridges, as well as by way of two bridges expressly for pedestrian use. These pedestrian bridges will form important links in the Harborwalk system. Vehicular and pedestrian access to the Project Area will be by way of the existing Northern Avenue and a combination of proposed new streets. The proposed pattern of streets and pedestrian walkways open to the public in the Project Area is set forth on Exhibit IV hereto.

Proposed Parking and Loading Facilities: The Project will include a parking garage that can accommodate approximately 2,500 cars below grade. Parking spaces, loading bays and other service loading facilities will be provided as set forth on Table A. The Project will include loading docks in the parking facilities below the structures along Northern Avenue, with off-street grade-accessed loading servicing the buildings north of the canal.

Proposed Access to Public Transportation: The MBTA stop located nearest the Project Area is the South Station stop on the Red Line. The Project Area will also be served by commuter and inter-city rail and bus service terminating at South Station. Numerous MBTA bus routes also terminate at South Station. The developer has submitted to the BRA with this Development Plan a feasibility study of water transportation links within the Boston Inner Harbor.

Proposed Dimensions of Structures: The dimensions of the major structures proposed for the Project are summarized on Table A.

Public Benefits: The Project is of critical importance to the revitalization of Boston's waterfront and will make significant economic contributions to the City through the development of infrastructure, the provision of construction and permanent jobs, the payment of linkage fees, and increased real estate taxes. It is estimated that total linkage payments may equal as much as $12.8 million, $10.7 million of which will be in the form of housing linkage and $2.1 million of which will be in the form of jobs linkage. It is also estimated that real estate taxes generated from the Project Area will increase from the existing $297,731 to approximately $12 million once the Project is complete. The developer will be contributing an unparalleled addition to the City's infrastructure, including street system expansion and seawall restoration, in addition to the canal, vehicular and pedestrian bridges, Harborwalk, canal walks, marina docks, marine services, parks and a Harborwalk overlook. The Project reflects the waterfront location of the site and includes water-dependent uses. The Project further respects the public goals and guidelines established for waterfront development in Boston, and draws its design from Boston's larger urban context to provide view corridors, public open spaces, and water views.

The developer plans to provide a carefully balanced and interrelated plan of public benefits. In the area of jobs, in addition to the job linkage commitment spelled out above to be used to fund job training programs, the developer will work with the BRA and the Mayor's Office of Jobs and Community Services and the Citizen's Advisory Committee to develop a Boston Resident's Construction Employment Plan, formulate an Employment Opportunity Plan, and implement a South Boston and local business and merchant preference outreach program. The development of the Project will result in the creation of a very substantial number of affordable housing units. 100 of these affordable housing units will be constructed by the developer within the Site and, in the discretion of the BRA and the Housing Trust, portions of developer's linkage funds may be made available to assist in the creation of up to 150 affordable housing units on adjoining or nearby sites. In addition, the developer will make a $20,000 contribution towards a housing study for the artists' community. The linkage, jobs and affordable housing commitments (respectively, the "Linkage Commitment", "Jobs Commitment" and "Affordable Housing Commitment"), are more fully set forth in the First Amendment to the Cooperation Agreement for Planned Development Area No. 23 to be entered into between the BRA and the developer.

Design Review: Section 3-1A of the Code provides that no structure shall be erected, reconstructed, or structurally changed or extended in a planned development area unless all drawings and

specifications therefor have been subjected to design review and approved by the BRA. In the Cooperation Agreement for Planned Development Area No. 23 dated March 20, 1986 (the "Cooperation Agreement"), which is currently being supplemented to incorporate obligations of the developer with regard to affordable housing, traffic mitigation and jobs, the developer agreed to submit the design of the Project to the BRA's design review process. This ongoing, multi-step design review process is set forth in the BRA's Development Review Procedures attached as an exhibit to the Cooperation Agreement. The design review process typically includes the review by the BRA of schematic drawings of the Project, design development materials and final contract documents and BRA approval is obtained at each step in this process. Certain portions of the Project have advanced to the stage where the BRA's approval of schematic drawings is being requested contemporaneously with the approval of the attached Development Plan. The Cooperation Agreement further requires the developer, after final design review approval, to promptly notify the BRA of proposed changes to public lobbies and arcades visible from the exterior of buildings, to open spaces and landscaping and to exterior features of buildings from previously approved design review submissions (other than refinements of details generally consistent with such previously approved submissions), and to obtain approval from the BRA prior to incorporating such changes into the drawings and specifications for the Project.

Compliance with the Plan: This Development Plan represents a stage in the planning process for a large-scale development project between the Master Plan stage and stage at which the Final Plans and Specifications are submitted to the BRA pursuant to section 3-1A of the Code for final design review approval and certification as to consistency with this Development Plan. It is the intention of this Development Plan to establish limits of development to be permitted in the Project Area and to ensure provision of certain public amenities. The developer will continue the planning and design of the Project in a manner consistent with these limitations and provision of these amenities. A finding of consistency with this Development Plan may be made by the BRA pursuant to section 3-1A of the Code for all or any portion of the Project provided the Project or such portion thereof complies with the following essential elements of this Development Plan (the "Plan Requirements"):

(1) Location and Appearance of Structures: All major above-grade buildings forming a part of the Project shall be located wholly within one of the lots referenced on Table A of this Development Plan. Each such above-grade building shall have a height and gross floor area not in excess of those permitted on Table A of this Development Plan for the respective lot on which such building is located. The facades of the Project's major buildings shall be constructed principally of patterned stone and brick.

(2) Open Spaces and Landscaping: In order to ensure that adequate open space is provided on the Site, no more than 40% of the Site shall be covered by the footprint of above-grade buildings. The landscape design in the Project Area shall reinforce the view corridors established by the street grid and building walls.

(3) Uses: Principal uses in the Project Area shall be consistent with those set forth on Table A of this Development Plan. These uses include residential, open space, marina, cultural, hotel, retail and office uses. Any substantial increase in the intensity of development of a particular use in the Project as a whole in excess of the limits permitted on Table A shall require the approval of the BRA and the approval of the Boston Zoning Commission, in each case after public notice and hearing.

(4) Densities: The FAR for the entire Project shall not exceed 4.25 and the FAR for the commercial office and retail components of the Project shall not exceed 2.25, both determined as set forth in the Proposed Densities section of this Development Plan.

(5) Traffic Circulation: The pattern of streets open to the public in the Project Area shall be substantially similar to that set forth on Exhibit IV to this Development Plan.

(6) Parking and Loading Facilities: No more than 2,600 vehicular parking spaces, nor less than 2,200 vehicular parking spaces, shall be located below-grade in the Project Area. Loading bays shall be provided on each lot at least to the extent set forth on Table A of this Development Plan.

(7) Dimensions of Structures: Building heights and gross floor areas on each respective lot shall not exceed those permitted on Table A of this Development Plan.

(8) Public Benefits: Public benefits in the Project Area shall include the developer's Affordable Housing Commitment, Linkage Commitment, Jobs Commitment and the following publicly accessible amenities: Harborwalk, Harborwalk overlook, boardwalk, waterfront park, oval, transient slips within the marina, canal and canal walk, substantially as shown on Exhibit IV hereto. Design of any portion of the Project so as to preclude inclusion of one of the above-referenced publicly accessible amenities shall require the approval of the BRA and the approval of the Boston Zoning Commission, in each case after public notice and hearing.

If the Final Plans and Specifications do not comply with the Plan Requirements, this Development Plan must be amended before approval of the Final Plans and Specifications by the BRA. Pursuant to section 3-1A of the Code, such amendment to this

Development Plan would require the approval of the BRA and the approval of the Boston Zoning Commission, in each case after public notice and hearing.

Other Documents: The document entitled "Supporting Documentation Section" attached hereto, and the reports entitled "Transportation", "Project Benefits", "Infrastructure", "Inner Harbor Ferry Feasibility Study" and "Urban Design" which are being submitted to the BRA simultaneously with this Development Plan, set forth background information on the proposed plans for the Project, and as such do not constitute a part of this Development Plan.

TABLE A
DIMENSIONS AND USES

Lot[1]	Minimum Number Loading Bays	Lot Area Not to Exceed[1]	Building Height (feet) Not to Exceed[2]	Principal Uses on Lot	Gross Floor Area of Buildings on Lot Not to Exceed[5]
A	1	38,354	325	Office Retail	494,590 15,570
B	3	39,407	122	Office Retail	169,630 21,700
C	3	42,361	122	Office Retail	159,930 13,610
D	4	59,052	334	Office Retail	581,610 42,280
E	0	25,821	110	Cultural	110,000[3]
F	1	55,448	220	Residential Retail	426,520 44,000
G	1	49,798	188	Residential Retail	250,460 10,420
H	0	42,084	131	Residential	149,750
Hotel	4	182,788	450	Hotel Retail	667,909 24,508
Harborfront I	0	13,231	-[4]	Open Space	-[4]
Harborfront II	0	66,856	-[4]	Open Space	-[4]
Canal	0	85,738	-[4]	Open Space	-[4]
Marina	0	124,842	-[4]	Marina	-[4]

[1] The lots referenced in this Table A are located approximately as shown on the plan attached to the Development Plan as Exhibit II. Certain lots set forth on Exhibit II may be reconfigured prior to the approval by the BRA of the Final Plans and Specifications. The BRA may find that such reconfigured lots are consistent with this Development Plan provided no less than 2/3 of the area of any reconfigured lot falls within the boundaries of such lot as set forth on Exhibit II.

[2] Heights provided are measured to the top of the highest occupiable floor of each building. In order to permit the developer to meet its Affordable Housing Commitment, and subject to the BRA's design review approval, the height of the buildings located on lots A, B, C and D may be increased by no more than 25 feet and the heights of the buildings located on lots F, G and H may be increased by no more than 30 feet.

[3] Includes approximately 3,000 square feet devoted to uses related to an adjacent docking space.

[4] It is anticipated that major above-grade buildings will not be located on this lot. However, certain structures to be located on this lot may, under a technical interpretation of the Boston Zoning Code, be considered "buildings" and thus possess building height and gross floor area.

[5] Each gross floor area figure presented is subject to an increase of up to 10% provided such increase is accompanied by a corresponding reduction in the gross floor area indicated on another lot in the Project which gross floor area on another lot in the Project is dedicated to the same princial use. In order to permit the developer to meet its Affordable Housing Commitment, and subject to the BRA's design review approval, the buildings on Lots A, B, C, D, F, G, and H may be increased in the aggregate by no more than 50,000 square feet of gross floor area. Any increase in Table C uses will result in a concomitant increase in the developer's linkage contribution. Except for the 50,000 square feet of gross floor area permitted to allow the developer to satisfy its Affordable Housing Commitment, the FAR for the Project as a whole shall not exceed 4.25 and the FAR for the commercial and office retail components of the Project shall not exceed 2.25, both as said FAR's are established in the Proposed Densities section above.

EXHIBIT I TO DEVELOPMENT PLAN

A certain parcel of land in the Commonwealth of Massachusetts, County of Suffolk, City of Boston, South Boston District, situated on the northerly side of Northern Avenue and shown as Fan Pier (Lot A) on a "Compiled Plan of Land in Boston, MA" (Two Sheets) dated 12 July 1985, revised 12 September 1985 by Survey Engineers of Boston, more particularly bounded and described as follows:

Beginning at a point at the intersection of the northerly sideline of Northern Avenue and the abandoned pier and bulkhead line of 1916 of the Fort Point Channel, said point being the southwesterly corner of the parcel; thence running

Northeasterly	1111.34 feet by a curve to the right having a radius of 910.00 feet to a point of compound curvature; thence running
Northeasterly	400.00 feet by a curve to the right having a radius of 2370.00 feet to a point of tangency; thence running
S 61 20 09 E	128.62 feet, said last three courses being by the pier and bulkhead line of 1916 (abandoned); thence turning and running
S 31 53 17 W	831.59 feet by lot B on said plan to an iron pipe on the northerly sideline of Northern Avenue; thence turning and running
N 58 06 43 W	1124.34 feet to a stone bound; thence turning and running
N 61 23 43 W	99.71 feet to the point of beginning, said last three courses being by the northerly sideline of Northern Avenue.

Containing 75,011 square meters, more or less, or 807,408 square feet, more or less, or 18.535 acres, more or less.

In addition to the foregoing, there is included the northerly half of Northern Avenue (approximately 50 feet in width) as it abuts the above described land.

Subject to and with the benefit of any and all other existing easements.

EXHIBIT II TO DEVELOPMENT PLAN - PROPOSED LOTS AND LOCATIONS OF BUILDINGS

NOTE: Locations and configurations of buildings provided for illustrative purposes only. The locations and configurations of the structures set forth in the Final Plans and Specifications shall conform to the Plan Requirements.

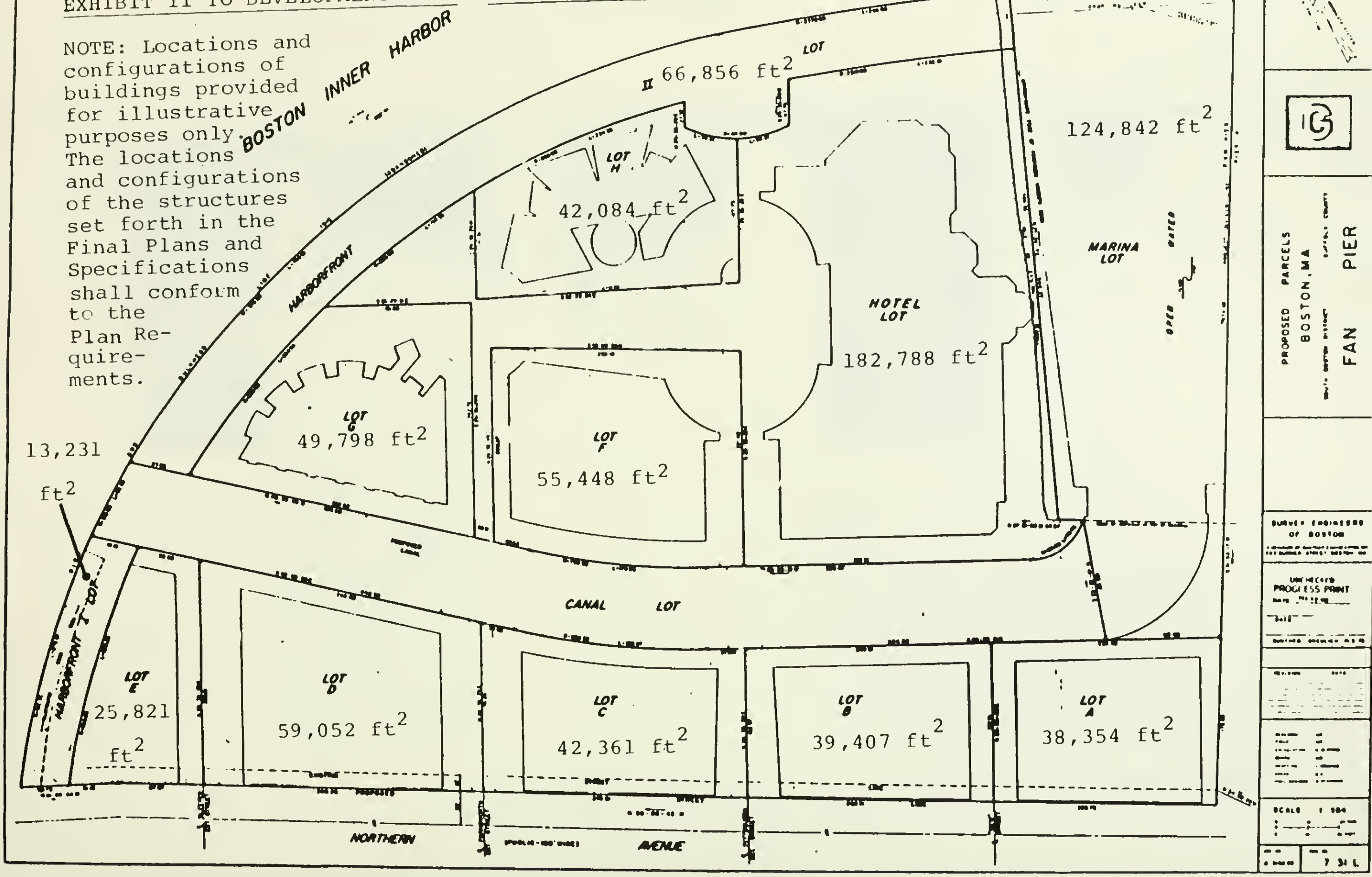
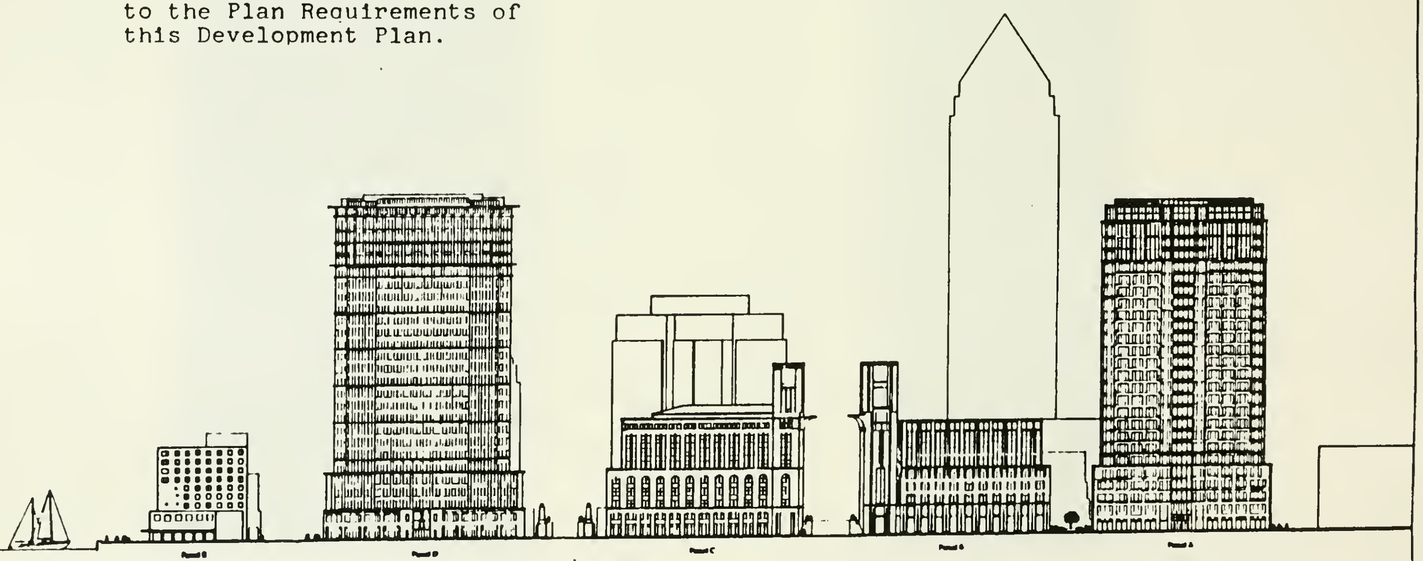


EXHIBIT III TO DEVELOPMENT PLAN - PROPOSED ELEVATIONS

NOTE: Elevations provided for illustrative purposes only. The appearance of the structures set forth in the Final Plans and Specifications shall conform to the Plan Requirements of this Development Plan.

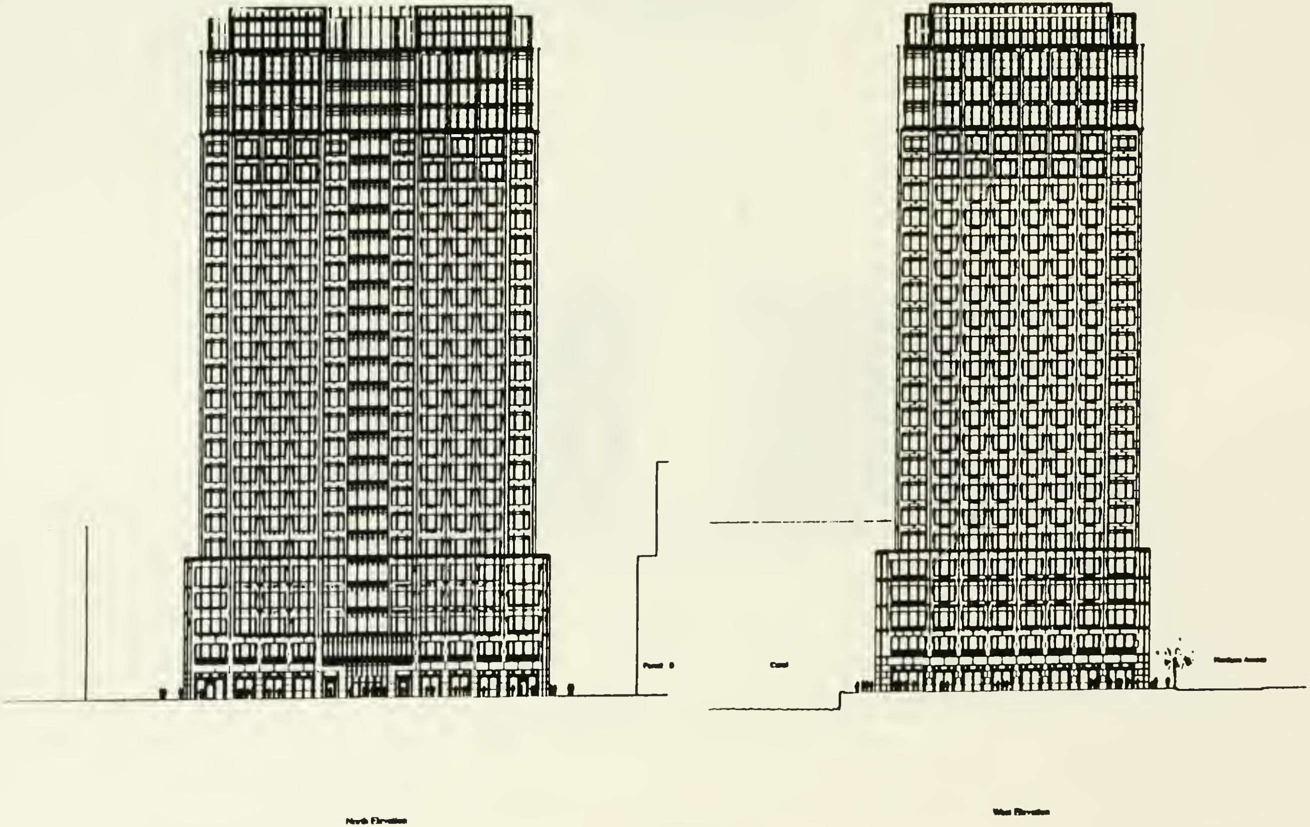


GP2 Northern Avenue Elevation

BOSTON FAN PIER MASTERPLAN

EXHIBIT III TO DEVELOPMENT PLAN - PROPOSED ELEVATIONS

NOTE: Elevations provided for illustrative purposes only. The appearance of the structures set forth in the Final Plans and Specifications shall conform to the Plan Requirements of this Development Plan.

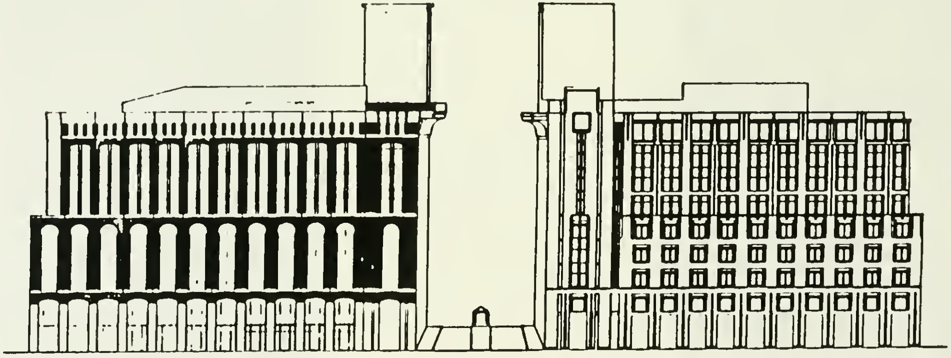


A2 Elevations

BOSTON FAN PIER MASTERPLAN

EXHIBIT III TO DEVELOPMENT PLAN - PROPOSED ELEVATIONS

NOTE: Elevations provided for illustrative purposes only. The appearance of the structures set forth in the Final Plans and Specifications shall conform to the Plan Requirements of this Development Plan.



SOUTH ELEVATION

A4 FLEVATIONS

EXHIBIT III TO DEVELOPMENT PLAN - PROPOSED ELEVATIONS

NOTE: Elevations provided for illustrative purposes only. The appearance of the structures set forth in the Final Plans and Specifications shall conform to the Plan Requirements of this Development Plan.

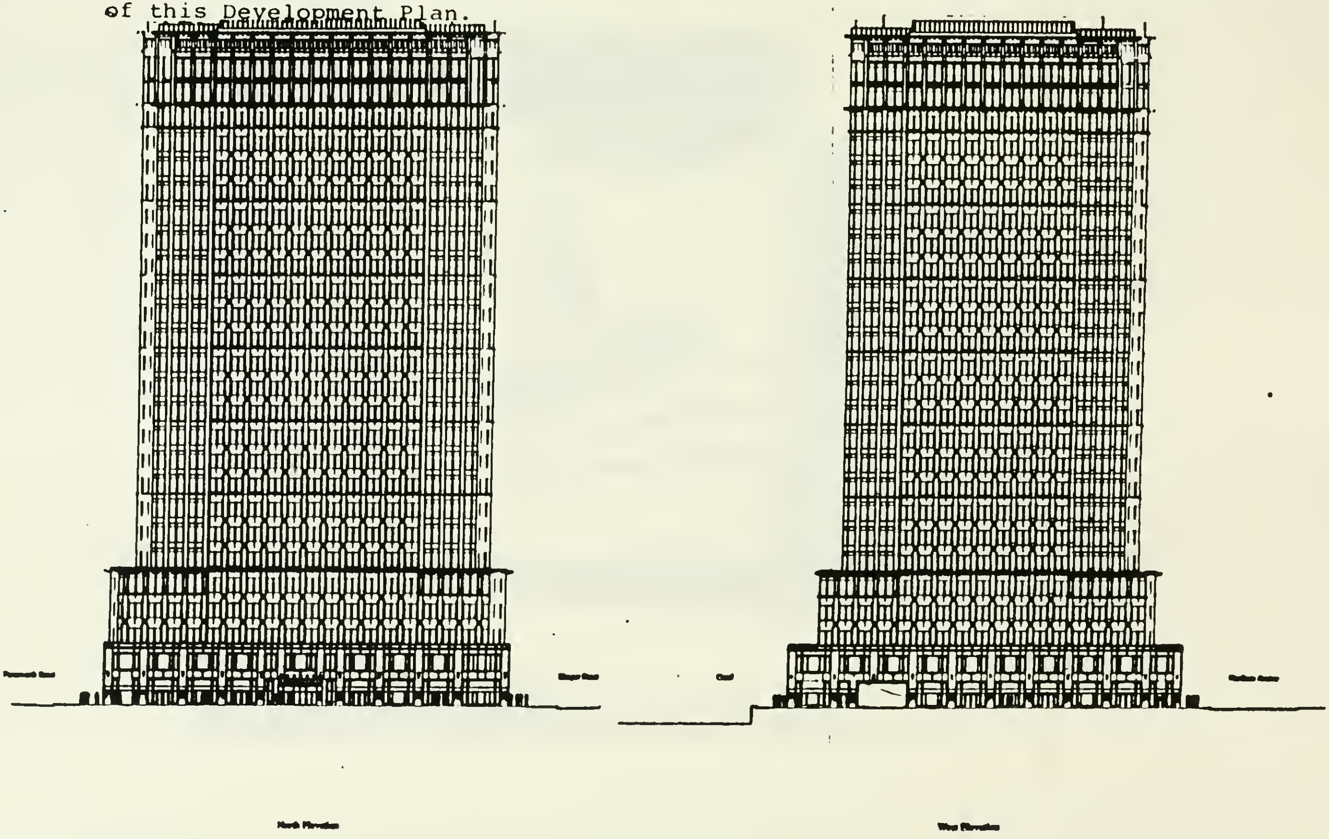


EXHIBIT III TO DEVELOPMENT PLAN - PROPOSED ELEVATIONS

NOTE: Elevations provided for illustrative purposes only. The appearance of the structures set forth in the Final Plans and Specifications shall conform to the Plan Requirements of this Development Plan.

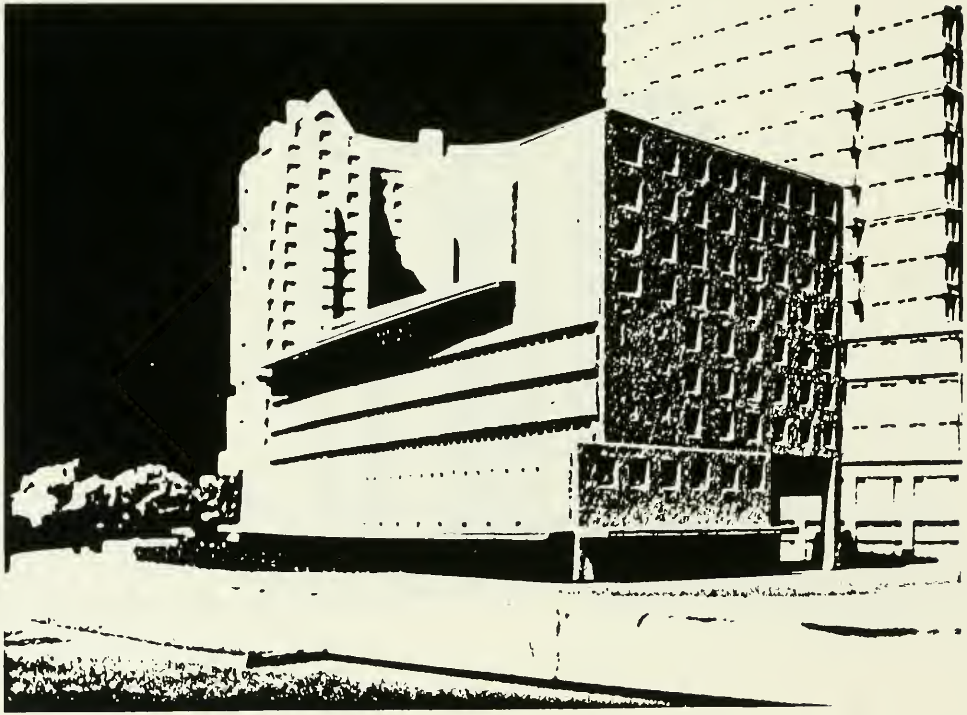
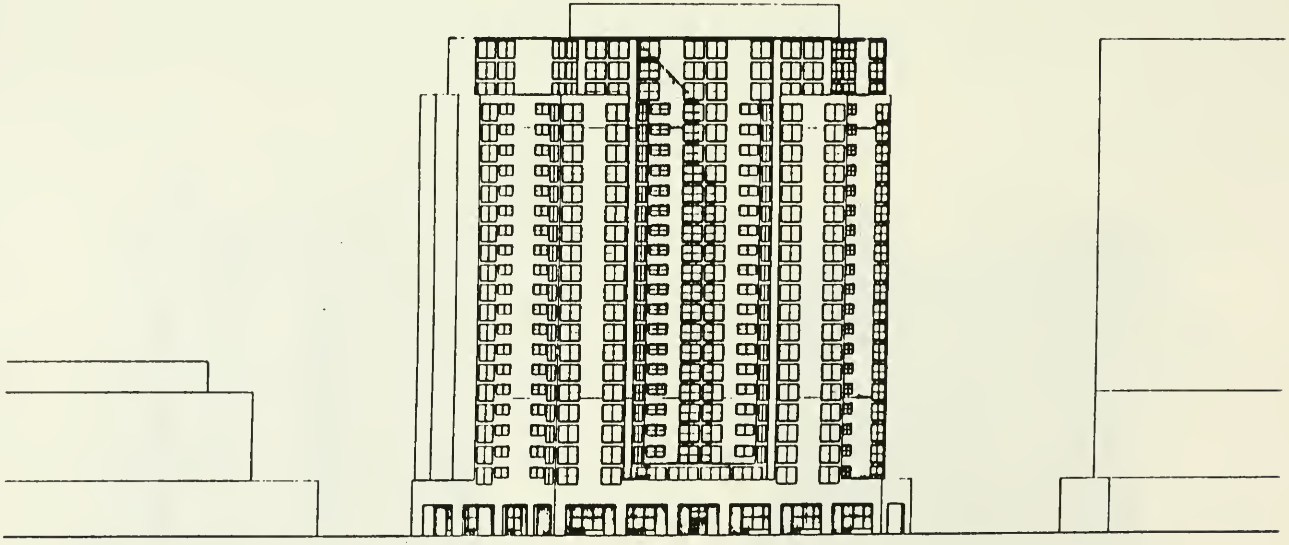


EXHIBIT III TO DEVELOPMENT PLAN - PROPOSED ELEVATIONS

NOTE: Elevations provided for illustrative purposes only. The appearance of the structures set forth in the Final Plans and Specifications shall conform to the Plan Requirements of this Development Plan.



F7 Boulevard Elevation

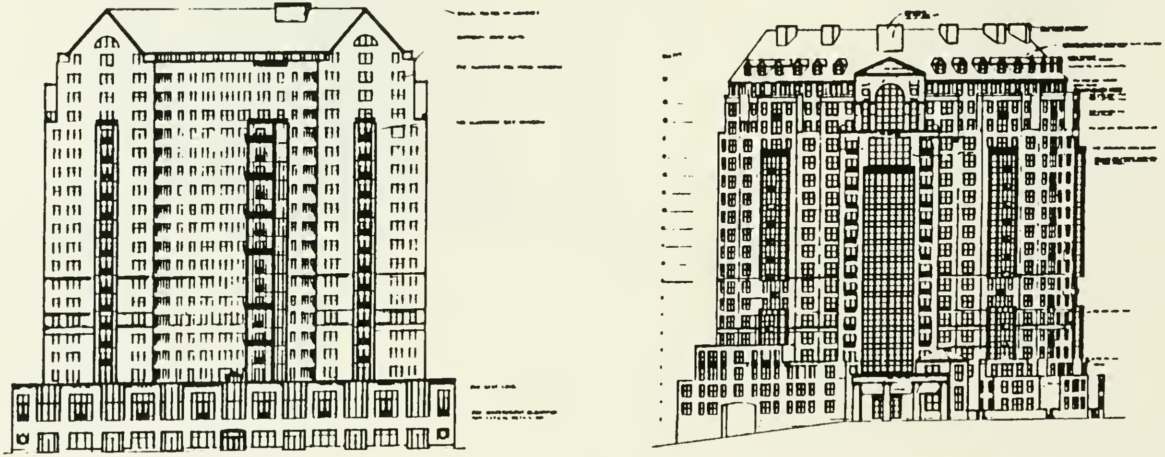
BOSTON FAN PIER MASTERPLAN

HBC Associates

VENTURI, RAUCH AND SCOTT BROWN

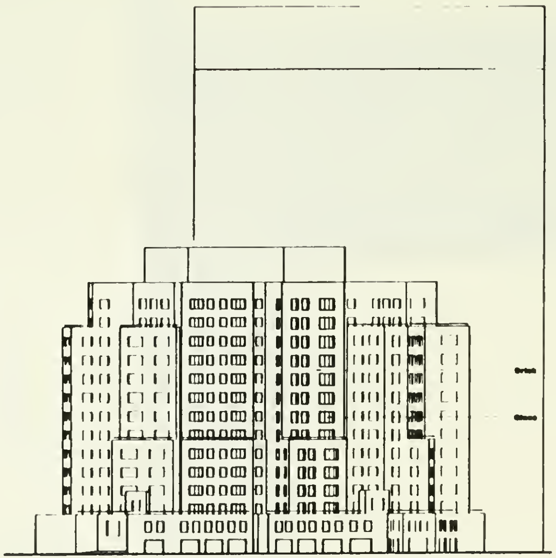
EXHIBIT III TO DEVELOPMENT PLAN - PROPOSED ELEVATIONS

NOTE: Elevations provided for illustrative purposes only. The appearance of the structures set forth in the Final Plans and Specifications shall conform to the Plan Requirements of this Development Plan.



G13 Canal and Harbor Elevations

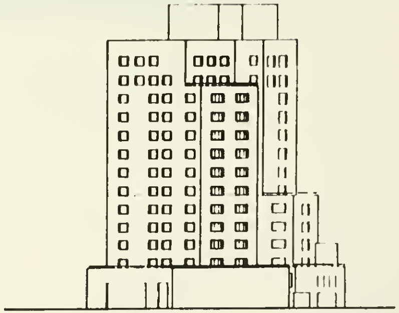
BOSTON FAN PIER MASTERPLAN



North Elevation

EXHIBIT III TO DEVELOPMENT PLAN - PROPOSED ELEVATIONS

NOTE: Elevations provided for illustrative purposes only. The appearance of the structures set forth in the Final Plans and Specifications shall conform to the Plan Requirements of this Development Plan.

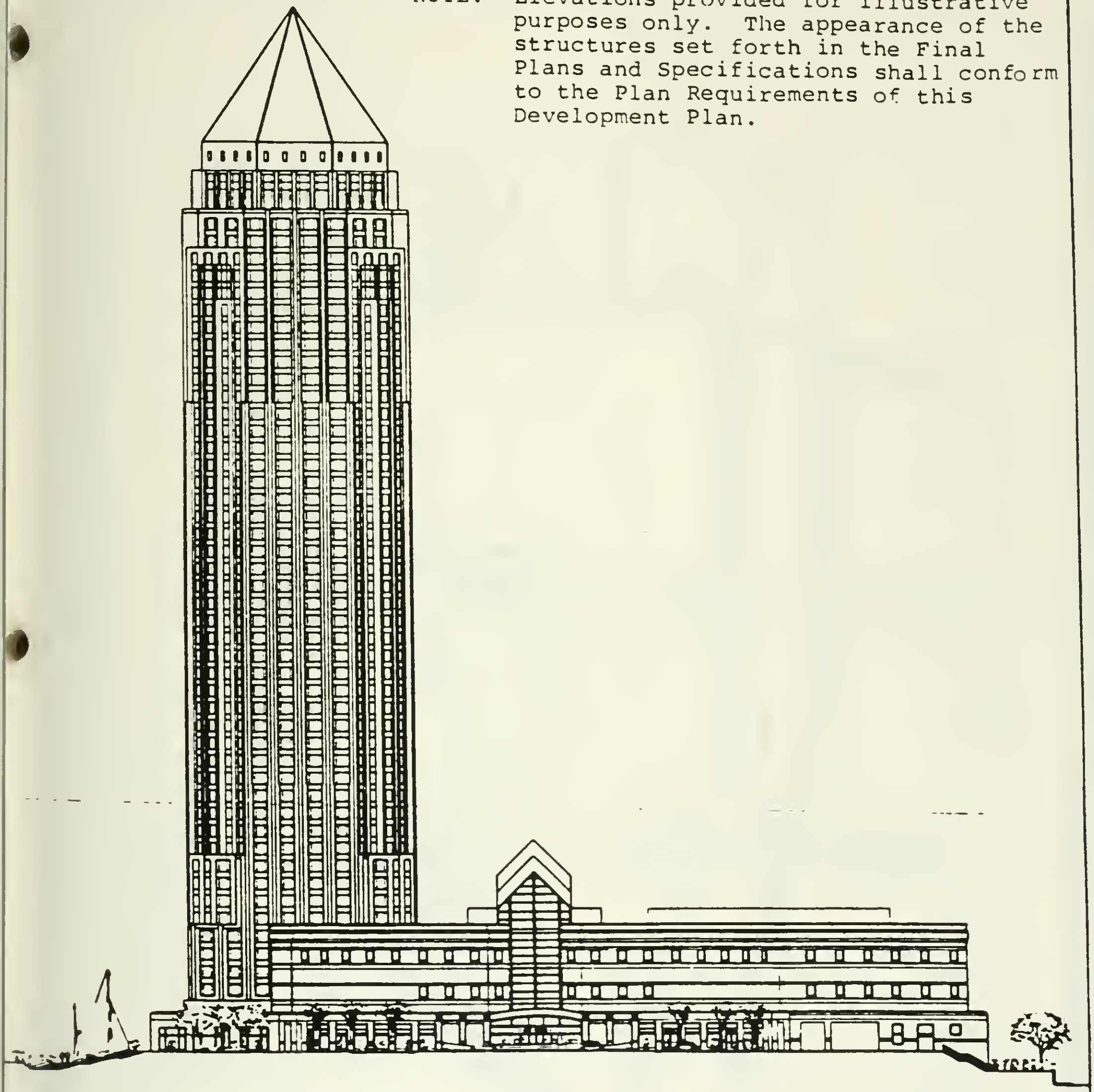


East Elevation

H6 Elevations

EXHIBIT III TO DEVELOPMENT PLAN - PROPOSED ELEVATIONS

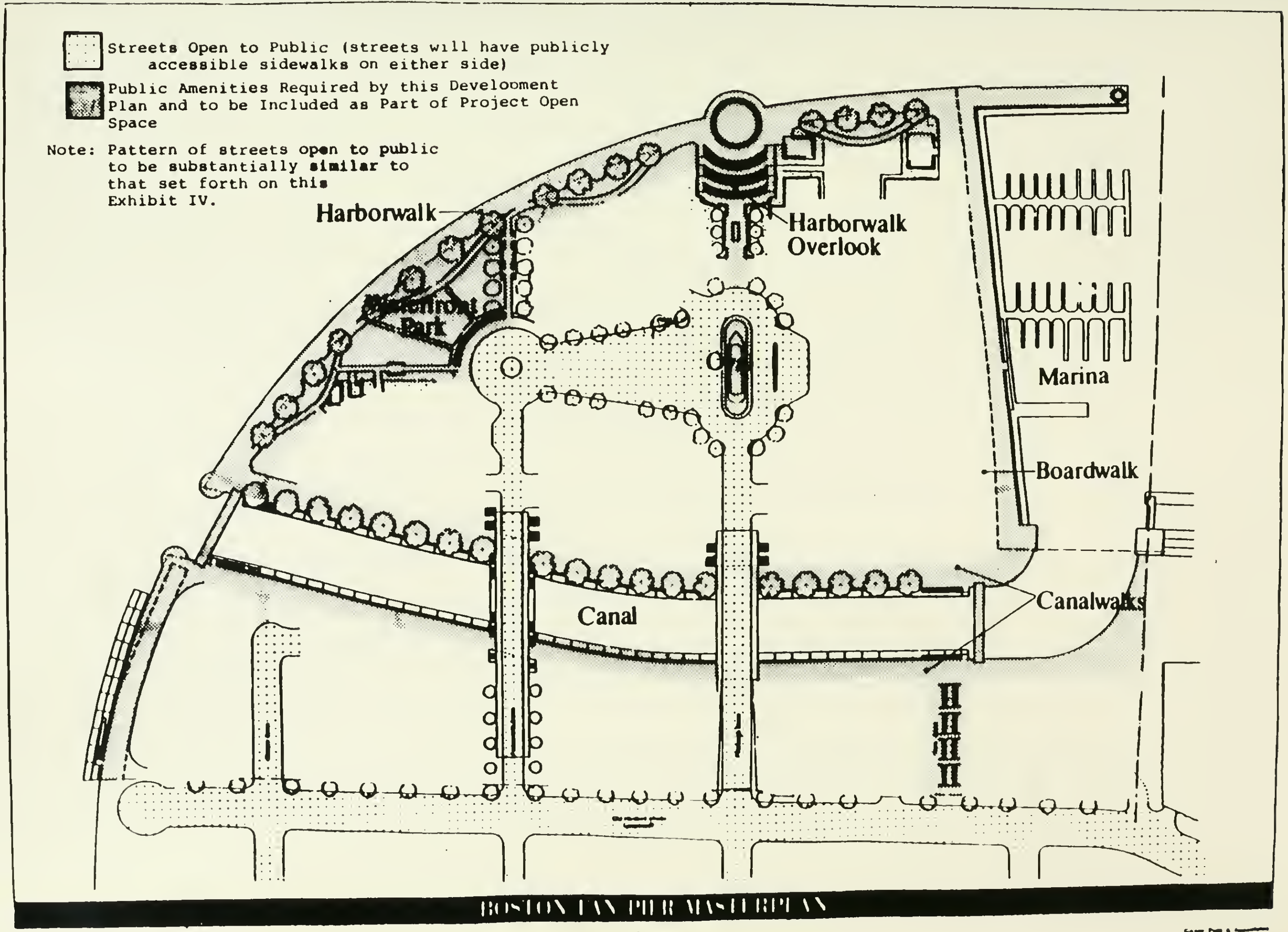
NOTE: Elevations provided for illustrative purposes only. The appearance of the structures set forth in the Final Plans and Specifications shall conform to the Plan Requirements of this Development Plan.



HRB Plaza Elevation

BOSTON FAN PIER MASTERPLAN

EXHIBIT IV TO DEVELOPMENT PLAN - PROPOSED OPEN SPACES AND STREETS



▨ Streets Open to Public (streets will have publicly accessible sidewalks on either side)

▨ Public Amenities Required by this Development Plan and to be Included as Part of Project Open Space

Note: Pattern of streets open to public to be substantially similar to that set forth on this Exhibit IV.

SUBSTITUTE PAGE X FOR DEVELOPMENT PLAN

for

PLANNED DEVELOPMENT AREA NO. [illegible]

[illegible]

DEVELOPMENT PLAN AND APPLICATION

[illegible]

to

PLANNED DEVELOPMENT AREA NO. [illegible]

[illegible]

[illegible]

SUBSTITUTE TABLE A FOR DEVELOPMENT PLAN
for
PLANNED DEVELOPMENT AREA NO. 23
contained in
DEVELOPMENT PLAN AND APPLICATION
WITH SUPPORTING DOCUMENTATION
for
PLANNED DEVELOPMENT AREA NO. 23
dated March 16, 1987

March 23, 1987

Delete Table A of the Development Plan for Planned Development Area No. 23 contained in the Development Plan and Application with Supporting Documentation for Planned Development Area No. 23 dated March 16, 1987 and substitute therefor the following Table A.

TABLE A
DIMENSIONS AND USES

Lot[1]	Minimum Number Loading Bays	Lot Area Not to Exceed[1]	Building Height (feet) Not to Exceed[2]	Principal Uses on Lot[6]	Gross Floor Area of Buildings on Lot Not to Exceed[5]
A	1	38,354	325	Office Retail	501,895 15,792
B	3	39,407	122	Office Retail	176,324 22,532
C	3	42,361	122	Office Retail	166,887 14,179
D	4	59,052	334	Office Retail	588,630 42,787
E	0	25,821	110	Cultural	110,000[3]
F	1	55,448	220	Residential Retail	426,520 44,000
G	1	49,798	188	Residential Retail	250,460 10,420
H	0	42,084	131	Residential	149,750
Hotel	4	182,788	450	Hotel Retail	667,909 24,508
Harborfront I	0	13,231	-[4]	Open Space	-[4]
Harborfront II	0	66,856	-[4]	Open Space	-[4]
Canal	0	85,738	-[4]	Open Space	-[4]
Marina	0	124,842	-[4]	Marina	-[4]

[1] The lots referenced in this Table A are located approximately as shown on the plan attached to the Development Plan as Exhibit II. Certain lots set forth on Exhibit II may be reconfigured prior to the approval by the BRA of the Final Plans and Specifications. The BRA may find that such reconfigured lots are consistent with this Development Plan provided no less than 2/3 of the area of any reconfigured lot falls within the boundaries of such lot as set forth on Exhibit II.

[2] Heights provided are measured to the top of the highest occupiable floor of each building. In order to permit the developer to meet its Affordable Housing Commitment, and subject to the BRA's design review approval, the height of the buildings located on lots A, B, C and D may be increased by no more than 25 feet and the heights of the buildings located on lots F, G and H may be increased by no more than 30 feet.

[3] Includes approximately 3,000 square feet devoted to uses related to an adjacent docking space.

[4] It is anticipated that major above-grade buildings will not be located on this lot. However, certain structures to be located on this lot may, under a technical interpretation of the Boston Zoning Code, be considered "buildings" and thus possess building height and gross floor area.

[5] Each gross floor area figure presented is subject to an increase of up to 10% provided such increase is accompanied by a corresponding reduction in the gross floor area indicated on another lot in the Project which gross floor area on another lot in the Project is dedicated to the same princial use. In order to permit the developer to meet its Affordable Housing Commitment, and subject to the BRA's design review approval, the buildings on Lots A, B, C, D, F, G, and H may be increased in the aggregate by no more than 50,000 square feet of gross floor area. Any increase in Table C uses will result in a concomitant increase in the developer's linkage contribution. Except for the 50,000 square feet of gross floor area permitted to allow the developer to satisfy its Affordable Housing Commitment, the FAR for the Project as a whole shall not exceed 4.25 and the FAR for the commercial and office retail components of the Project shall not exceed 2.25, both as said FAR's are established in the Proposed Densities section above.

[6] Below-grade parking facilities containing 2,200 to 2,600 spaces will be located, with respect to the parking facility south of the canal, below the surface of Lots A, B, C, D, and possibly Lot E, and, with respect to the parking facility north of the canal, below the surface of Lots F, G, H, the Hotel Lot, and possibly the Harborfront II Lot. The majority of the below-grade parking spaces in the Project Area will be located north of the canal.

4/23/87

Incorporates changes
for meeting of 4/23/87

FIRST AMENDMENT to the COOPERATION AGREEMENT
for
PLANNED DEVELOPMENT AREA NO. 23
FAN PIER

AGREEMENT made as of the ____ day of ___________, 1987, by and between the BOSTON REDEVELOPMENT AUTHORITY (the "Authority"), and HBC ASSOCIATES, a joint venture between HT-BOSTON, INC. and CARPENTER FAN PIERS LIMITED PARTNERSHIP (successor to the interest of Carpenter Properties, Inc. in HBC Associates) (the "Applicant").

WHEREAS, in connection with the designation of the Locus as Planned Development Area No. 23 ("PDA No. 23"), Applicant and the Authority entered into a Cooperation Agreement for Planned Development Area No. 23, dated as of March 20, 1986 (the "Cooperation Agreement"); and

WHEREAS, by vote of the Authority on _____________, 1987, the Authority has approved Applicant's Development Plan for PDA No. 23 attached hereto as Exhibit __ (the "Development Plan"); and

WHEREAS, the Applicant and the developer of Planned Development Area No. 24 (which developer of Planned Development Area No. 24, its successors and assigns shall be hereinafter referred to as "BMC") have submitted to the Authority a document

dated March 16, 1987 and entitled Project Benefits, as supplemented from time to time, attached hereto as Exhibit __ (the "Project Benefits Report") which document discusses, among other things, steps to be taken by the Applicant to provide affordable housing on-site, and steps to be taken to promote the availability of jobs created by the Project to Boston residents, including women and minorities; and

WHEREAS, the Applicant and BMC have submitted to the Authority a Transportation Impact and Access Plan attached hereto as Exhibit ___ (the "TAP") and a document entitled Infrastructure attached hereto as Exhibit __ (the "Infrastructure Report") both dated March 16, 1987; and

WHEREAS, the Project Benefits Report and the Infrastructure Report have been amended by a document entitled "Supplementary Report Information" and dated March 23, 1987 attached hereto as Exhibit __; and

WHEREAS, all capitalized terms not otherwise defined in this First Amendment shall have the meanings given to them in the Cooperation Agreement except that the terms "Site," "Project Area" and "Project" as used herein shall have the meanings given to them in the Development Plan; and

WHEREAS, in the course of the Authority's review of the Development Plan, Applicant and the Authority have made various additional commitments to cooperate that warrant this First Amendment to the Cooperation Agreement;

NOW, THEREFORE, the Applicant and the Authority hereby agree that the Cooperation Agreement is amended by adding thereto the following:

A. Jobs and Procurement

1. Jobs. The Applicant agrees to take steps reasonably necessary to implement programs relative to the creation of jobs as set forth in the Project Benefits Report. Such steps and programs shall include (a) in addition to housing linkage funds, the payment of Jobs Linkage Funds, (b) cooperation with the Mayor's Office of Jobs and Community Services ("Mayor's OJCS") toward the goal of maximizing employment benefits, particularly for South Boston, through participation in a Boston for Boston Agreement applicable to the Project; (c) implementation of an outreach program for South Boston and local businesses and stores to give preference to such business and stores as tenants in the project on competitive terms and conditions; and (d) compliance with the Boston Residents Jobs Policy, including submission of a Boston Residents Construction Employment Plan. In addition, the Applicant agrees to pay the sum of $146,000 on terms to be agreed to with the Authority. Said payments shall be made to the Mayor's OJCS for the implementation and oversight of a South Boston Job Stop to ensure that Boston residents, and South Boston residents in particular, are notified, recruited and prepared for new permanent job openings created by the project. It is noted the BMC has agreed in the First Amendment to the Cooperation Agreement for Planned Development Area No. 24 to pay the sum of $54,000 to

OJCS for similar purposes (which obligation is independent of and unrelated to that of the Applicant hereunder).

2. Procurement. The Applicant voluntarily agrees to establish a Minority Business Enterprise Program. The purpose of this Program is to promote participation by minority business enterprises in providing goods and services related to the operation of the Project. The Applicant agrees to use good faith efforts to obtain a goal of 10% participation in such provision of goods and services with qualified minority business enterprises at competitive terms. Said Program shall be subject to the approval of the Authority.

B. Housing

The development of the Project will result in the creation of a very substantial number of affordable housing units. One hundred (100) of these affordable housing units will be constructed by the Applicant directly on site. In accordance with Article 26 of the Boston Zoning Code and the operating rules and regulations of the Neighborhood Housing Trust, portions of the Applicant's linkage funds may be made available to assist in the creation of up to 150 affordable housing units and 40 units of artists live/work space on adjoining or nearby sites. In addition, the Applicant agrees to enter into a three-party agreement with the Fort Point Artist Community, Inc. (the "FPAC") and the Authority for the express purpose of assisting in the process of obtaining linkage funds from the Neighborhood Housing Trust for the aforementioned development. The Applicant's

obligation under such agreement shall be to provide real estate development services for the aforementioned development. The Authority will assist the artists' community in developing the aforementioned development.

The Applicant had initially proposed solely contribution of linkage for off-site affordable units; subsequently the Applicant had proposed the construction of a "shell" of affordable units for sale at its cost. Pursuant to recent discussions with the Authority and other City and State officials and the Fan Pier/Pier 4 Citizens Advisory Committee (the "CAC"), the Applicant has substantially modified its affordable housing solution.

The Applicant agrees to create 100 affordable housing units directly on the Fan Pier site for residents of the City, with primary preference for residents of South Boston. Eighty (80%) percent of the affordable housing units to be created by the Applicant will provide Equity Ownership Opportunity for individuals, elderly persons, and families and twenty (20%) percent of the housing units will be rental units for low income individuals, elderly persons, and families.

The 100 units of affordable housing that Applicant will build on site, in separate or combined building configurations designed by a prominent architect, shall consist of approximately 60% one-bedroom units and 40% two-bedroom units, a substantial number of which shall be designed for the elderly. The developer agrees to include units designed for the handicapped and units designed for large families within the on-site affordable housing component. The mix of such units shall be developed in

consultation with CAC and subject to the approval of the Authority. All affordable units will meet MHFA size standards, namely approximately 750 gross square feet for one-bedroom units and 900 gross square feet for two-bedroom units.

(a) Rental Units

Twenty (20) rental units shall be reserved for low-income persons with qualifying income at 50% of the Boston SMSA median income at the time of rental.

(b) Equity Ownership Opportunity Units

1. Forty (40) affordable home ownership opportunity units will be made available for sale to individuals and families with qualifying income at 80% of the Boston SMSA median income at the time of sale;
2. Forty (40) affordable home ownership opportunity units will be made available for sale to families and individuals with qualifying income at 110% of the Boston SMSA median income at the time of sale;

(c) Long-Term Affordability

All of the 100 units to be constructed by the Applicant will be designed to achieve the goal of long-term affordability by programs mutually agreed by the Authority, the City and State, the Applicant and any applicable subsidizing or lending agency. This goal may also be furthered by deed restrictions on resale prices, limitations on subleasing profits, and other similar devices. These

legal restrictions in combination with the foregoing programs will aim to insure that the 100 affordable units on site retain long-term affordability for the benefit of Boston residents.

In order to achieve the on-site affordable housing component of the Project, it will be necessary for Applicant to use a combination of state and federal subsidy programs and/or certain additions to the commercial and residential space in the Project, as may be mutually agreed upon by Applicant and Authority. Any use of linkage funds on or off the Site will be subject to the provisions of Article 26 and the submission of a Housing Creation Proposal subject to the approval of the Authority and the Neighborhood Housing Trust.

As indicated above, 60% of the on-site affordable units will be available to persons of low and moderate income and the balance will be available to persons of upper moderate income, all as defined by governmental standards. Furthermore, of the 100 affordable units being created on site, 80% of these units will be Equity Ownership Opportunity Units which will provide home ownership opportunities to persons who would be otherwise unable to acquire ownership of equivalent housing in Boston, while 20% of the units will be long-term rentals for low and moderate income persons.

(d) Fair Housing. The Applicant agrees to market its housing units in accordance with the City's Fair Housing Plan. The Applicant will submit an Affirmative Fair Housing Marketing

Plan acceptable to the Boston Fair Housing Commission and the Authority prior to entering into any sales or rental agreements.

C. Transportation

1. Construction Mitigation. Notwithstanding the limitations set forth in paragraphs C(4)(ii), C(4)(iii) and C(4)(iv) below, the Applicant shall annually prepare and submit to the Authority and the Boston Transportation Department (the "BTD") a construction management plan. Such plan will report on construction traffic, commencing with the start of construction on the Locus, and shall outline Applicant's commitment to take steps, consistent with those required generally by the City and the Authority on construction projects in the City, to minimize traffic impacts of construction of the Project from truck and automobile traffic. These steps will be subject to the approval of the Authority and the Commissioner of the BTD based on input from the CAC in their full advisory capacity. The truck traffic mitigation measures will include limitations on hours of entrance into and exit from the Locus, truck size, and truck routes as set forth in the TAP. Such truck routes will be subject to ongoing review and approval by the BTD, which will take into consideration the advice of the CAC and the South Boston Transportation Advisory Committee. The BTD and/or the Authority may require use of other routes, including in particular the South Boston Bypass when that road becomes operational. The automobile traffic mitigation measures will include construction worker mitigations, including provision of transit information, parking limitations, and management of shifts consistent with the provisions of TAP.

Applicant's initial studies indicate that barging of construction excavate is not feasible. Applicant will continue to review and verify the accuracy of its initial conclusions regarding alternatives for removing excavation materials from the Locus during construction, including use of trucks, rail and barge, and will submit the results of its further analysis to the Authority and the BTD within six months after the date hereof or prior to the issuance of the initial building permit, whichever occurs earlier. Such submission shall include analysis of financial feasibility. If, contrary to Applicant's initial analysis, such further analysis indicates that it is practicable and financially feasible, the Applicant will be required by the BTD to promptly undertake and diligently prosecute all action required for the removal and deposition of excavate by barge and, upon completion of all such actions, will remove the excavate by barge. The Authority and the BTD agree (1) to cooperate in obtaining all requisite permits and approvals for such barging and (2) so long as Applicant is diligently prosecuting such actions, to continue to allow removal of excavate by land.

2. Goals. The Applicant has previously delivered the TAP to the Authority and the BTD in fulfillment of its obligations under the Cooperation Agreement. In the case of any conflict between this Agreement and the TAP, this Agreement shall govern. The TAP sets forth a monitoring program for the Project and establishes the following goals with regard to: (1) PM peak-hour outbound vehicle trips from the Project Area (the "On-Site Goals")

and (2) the delays encountered at six locations in the vicinity of the Project (the "Off-Site Goals"):

(i) On-Site Goal: PM peak-hour outbound vehicle-trips from the Project Area equal to or less than the LARGER of:

a. Existing PM peak-hour vehicle-trips out of the parking lot currently located on the Locus; or

b. $$0.50 \times \left(\frac{\text{gross square feet of office space in the Project}}{1{,}000}\right)$$

$$+\ 0.28 \times \left(\frac{\text{gross square feet of retail space in the Project}}{1{,}000}\right)$$

$$+\ 0.23 \times (\text{number of hotel rooms in the Project})$$

$$+\ 0.15 \times (\text{number of housing units in the Project})$$

(ii) Off-Site Goals: The following intersection approaches and roadway links (the "Monitored Intersections") will be monitored for attainment of the goals noted below:

- New (or Old) Northern Avenue Bridge (westbound approach to the intersection of Northern Avenue and Atlantic Avenue);
- Congress Street Bridge (westbound);
- Summer Street Bridge (westbound);
- Westbound Summer Street approach to Dewey Square;
- Southbound A Street between Congress Street and Melcher Street;
- Eastbound Summer Street approach to D Street.

Additional off-site monitoring locations at the intersections of the Seaport Access Road connecting ramps with new Northern Avenue may be necessary after these roads are open.

As part of the Supplemental Transportation Access Plan described below, the Applicant will report to the Authority and the BTD the volumes for the previous year for each Monitored Intersection, with statistical information regarding the range of volumes encountered and the standard deviations from the mean. The 85th percentile volume will be evaluated against the following goals:

a. Stopped delay per vehicle on a signalized intersection approach will not result in deterioration below Level of Service "D" or existing conditions, whichever is worse; or

b. Total approach volume on a roadway link is less than 110 percent of the existing 85th percentile volume.

The calculation of stopped delay for the 85th percentile volume will be based on the following:

a. Green time will be the larger of:
   (1) existing green time allocated to the approach; or
   (2) actual green time allocated to the approach during the monitoring period.

b. Approach capacity will be the larger of:
   (1) existing approach capacity; or
   (2) actual approach capacity during the monitoring period.

3. Monitoring.

(i) On-Site Monitoring. Commencing with occupancy for any building constructed as part of the Project, the Applicant

shall monitor traffic impacts of AM peak-hour inbound vehicle trips to the Site and PM peak-hour outbound vehicle trips from the Site.

(ii) Off-Site Monitoring. Commencing two years after approval by the Zoning Commission of the Applicant's Development Plan, the Applicant and BMC (and other members of the Northern Avenue Corridor Transportation Management Association (the "TMA") hereinafter referred to) shall monitor AM peak-hour and PM peak-hour delays encountered at the Monitored Intersections.

(iii) Supplemental Traffic Access Plan. Within one year after approval by the Zoning Commission of the Applicant's Development Plan, the Applicant shall deliver to the Authority and the BTD, for their approval, annually a Supplemental Traffic Access Plan for the Project (the "STAP"). The Authority's and the BTD's approval of the STAP will consider any input of the CAC in its advisory role. The STAP shall set forth data collected from monitoring over the preceding year and shall compare such data with the On-Site Goals and Off-Site Goals to determine whether the On-Site Goals and Off-Site Goals have been exceeded during the preceding year. The STAP shall also provide a four-year projection of the traffic levels in the vicinity of the Project, incorporating changes in condition since the preceding STAP, including increases or decreases in background traffic, changes in development activity and changes in the scheduling of infrastructure improvements.

4. Mitigation Measures.

(i) On-Site Goals. The Applicant shall implement some or all of the following mitigation measures as described in the TAP to the extent necessary to achieve the On-Site Goals:

a. The promotion of flexible work hours for businesses located on the Locus through provision of utilities during off-peak-hours and other appropriate measures;

b. The provision of public transit information, transit pass sales and the promotion of transit use by providing incentives for employer transit pass subsidies on the Locus;

c. The promotion of ride sharing and the provision of computerized matching services on the Locus;

d. Reservation of spaces in preferential locations for car pool and van pool parking on the Locus;

e. Sponsorship of, and preferential parking rates for, van pools to and from the Locus;

f. Preferential parking rates for car pool parking on the Locus;

g. The provision of land-based facilities on the Locus for water taxi service to and from the Locus;

h. The provision of an airport motor vehicle shuttle service to and from the hotel on the Locus; and

i. Preferential parking rates on the Locus for monthly and daily parking spaces not available on working days until after 9:30 A.M.

In addition, the Applicant shall undertake the following mitigation measures whether or not such measures are necessary to achieve the On-Site Goals and the Off-Site Goals:

j. The provision of planning assistance and on-site improvements required for all reasonably necessary shuttle bus service, as outlined in the TAP. The Authority will work with appropriate public agencies to establish such service. Applicant, together with BMC, will operate such a shuttle bus service on an interim basis from initial occupancy of any building in the Project;

k. (1) The provision of planning and feasibility studies for water transportation systems in Boston Inner Harbor and (2) cooperation with private and public entities in the provision of water transportation service for commuters, airport users and tourists in Boston Inner Harbor through (x) construction and management on the site of a water shuttle dock and excursion boat landing, (y) landside water transportation facilities, including waiting space, ticketing and public rest rooms, and (z) initial operation of, or a comparable funding commitment for, a water shuttle between the Project and Logan Airport. It is noted that the following commitments have been made by BMC with regard to water transportation in the First Amendment to the Cooperation Agreement for Planned Development Area No. 24 (which commitments are independent of and unrelated to those of the Applicant hereunder): Promotion of a water

transportation system by taking the following steps: (1) the provision of a water taxi service for Inner Harbor users, including commuters, airport users and tourists; (2) construction and management on the Site of a water taxi dock and coastal cruise ship landing; and (3) provision of landside water transportation facilities, including waiting space, ticketing and public rest rooms.

(ii) Off-Site Goals. If the monitoring data set forth in the STAP indicates that delays encountered at the Monitored Intersections are in excess of the Off-Site Goals ("Off-Site Non-Attainment"), then the Applicant shall take reasonable steps to further implement the mitigation measures listed in 4(i)(a) through 4(i)(i). The Applicant shall be relieved of its responsibility to undertake such further implementation of mitigation measures only to the extent that the Applicant can establish to the reasonable satisfaction of the Authority and the BTD that such Off-Site Non-Attainment is not the result of traffic from the Project.

The Authority and the BTD shall use reasonable efforts to implement all reasonable measures to reduce the delays encountered at the Monitored Intersections below the Off-Site Goals (the "BTD Mitigation Measures"). The BTD Mitigation Measures may include, among other matters, as deemed appropriate and feasible by the Commissioner of the BTD, measures which increase roadway capacity (such as signal alteration, intersection channelization, roadway construction

and limitations on on-street parking) and measures which decrease roadway demand (such as limitations on off-street parking). The Authority and the BTD shall also use reasonable efforts to cause all members of the TMA to implement mitigation measures comparable to those required of the Applicant throughout this Section 4 including, in particular, bus shuttle service as to which the Authority and the BTD shall use best efforts; if and to the extent the Authority does not impose particular mitigation measures, where applicable, on all members of the TMA, the Applicant shall not be required to implement mitigation measures not uniformly imposed other than those listed under 4(i)(j) and 4(i)(k) above.

(iii) Additional Mitigation Measures Regarding Initial Buildings. The buildings in the Project containing the first 75% of the gross floor area (as defined by the Code as of the date of the Authority's approval of the Development Plan) to be constructed in accordance with the then approved development plan for the Project (such 75% under the current Development Plan is 2,409,444 square feet) are hereinafter referred to as the "Initial Buildings". Buildings proposed to be constructed after the Initial Buildings are hereinafter referred to as the "Later Buildings". Applicant agrees that within the group of both the Initial Buildings and the Later Buildings, there shall be a mix of commercial and residential uses and that a significant commercial element shall be deferred to the Later Buildings.

With respect to the Initial Buildings, the Authority, in consultation with and with the approval of the BTD, and Applicant may agree on measures to mitigate Off-Site Non-Attainment in addition to those set forth in Sections 4(i)(a) through 4(i)(k). If no agreement on such other measures is reached and if, notwithstanding the mitigation measures under 4(i)(a) through 4(i)(k), Off-Site Non-Attainment continues, then in order to assist in paying for other measures which the Authority, in consultation with and with the approval of the Commissioner of BTD, may deem necessary and appropriate, the Applicant shall, upon request by the Authority and the BTD, pay to the Authority for transfer to the BTD for implementation of such traffic mitigation measures by the BTD, in lieu of implementing any additional mitigation measures (other than 4(i)(a) through 4(i)(k) above, which Applicant shall continue to be obligated to perform with respect to the Initial Buildings as set forth in this Paragraph 4), an amount equal to the sum of (x) $.50 per square foot (the "Traffic Payment") of gross floor area (as defined above) of office and retail space in those Initial Buildings for which building permits have been issued at such time (as a one-time payment with respect to each of the Initial Buildings for which building permits have issued) less (y) expenses incurred for mitigation measures other than those listed under 4(i)(a) through 4(i)(k) above.

(iv) Additional Mitigation Measures Regarding Later Buildings. With regard to each Later Building, the Authority, in consultation with and with the approval of the BTD, and the Applicant, at the time the Applicant submits to the Authority a request for approval of the design development drawings for such Later Building, shall agree on reasonable mitigation measures related to such Later Building to be undertaken by the Applicant to assist in the attainment of the Off-Site Goals (the "Further Mitigation Measures"). Such Further Mitigation Measures may, but shall not necessarily, include the mitigation measures set forth in sections 4(i)(a) through 4(i)(i) above.

The reasonableness of Further Mitigation Measures requested of the Applicant shall include consideration of: Applicant's success in meeting On-Site Goals; the Authority's and BTD's efforts in implementing BTD Mitigation Measures; consistency of Further Mitigation Measures with those required generally by the City and the Authority for major development projects in the area at that time; the specific traffic characteristics of such Later Building; and, the direct impact of such Later Building on Off-Site Non-Attainment.

If the most recent STAP indicates that the Off-Site Goals will not be attained following the implementation of the Further Mitigation Measures the Applicant shall take either or both of the following steps as the Authority, in

consultation with and with the approval of the BTD, may then require:

a. Payment to the Authority (for transfer to the BTD for implementation of additional BTD Mitigation Measures) of an amount (the "Mitigation Payment") equal to $1.50 per square foot of gross floor area (as defined above) of the last twenty-five percent (25%) of office and retail space to be constructed in the Project, with such payments to be made at the time that building permits are issued for the superstructure of the buildings containing such office and retail space but in no event prior to the issuance of a building permit for the superstructure of the first of the Later Buildings; and/or

b. Deferral of the commencement of construction of such Later Building during the Deferral Period as follows: The Deferral period shall commence on the later of (1) the 30th day following Applicant's submission to the Authority of a bona fide set of final plans and specifications for the last of the Initial Buildings or (2) the Applicant's submission of a bona fide set of final plans and specifications for the first of the Later Buildings, and shall continue for four years thereafter. During the Deferral Period, the Authority, with the approval of the BTD, may cause the issuance of a building permit for the superstructure of each of the Later Buildings to be deferred for up to one year from Applicant's submission to the Authority of a bona fide set of final plans and

specifications for such Later Building. In addition to such deferral, Applicant agrees that no more than one such building permit is to be issued for each twelve month portion of the Deferral Period which has then elapsed.

The Further Mitigation Measures may be relaxed by the Authority and the BTD to the extent the Applicant develops, operates or manages other buildings in the Project in a manner that will offset the Later Building's incremental contribution to the goals set forth herein.

It is understood that the monitoring and mitigation measures, individually and in the aggregate, set forth in this Agreement with the exception of those mitigation measures listed under 4(i)(a) through 4(i)(i) above, shall be selected and implemented in a manner satisfactory to the Authority which in its reasonable judgment does not adversely affect the financial feasibility of the Project.

(v) Off-Site Attainment. If there is Off-Site Attainment, the Applicant may propose to the Authority and the BTD for their reasonable approval a decrease in, or cessation of, one or more mitigation measures (including deferral periods) which they shall not unreasonably refuse to approve.

5. Transportation Management Association. The Applicant shall join with the Authority, the BTD and BMC to establish the TMA. The TMA shall have as its members, in addition to the Applicant, all owners or lessees of real property (other than owners or lessees of residential

dwelling units) located within a planned development area (a "Northern Avenue PDA") as designated under the Boston Zoning Code, provided such planned development area is also located in whole or in part within the area described on Exhibit __ attached hereto (the "Northern Avenue Corridor"). The TMA shall also have as its members all developers ("Non-PDA Developers") of projects located in the Northern Avenue Corridor but not within a Northern Avenue PDA, which projects contain over 100,000 square feet of floor space dedicated to office or retail uses ("Non-PDA Projects") and all persons or entities (other than owners of residential dwelling units) purchasing real property located in Non-PDA Projects. The Authority and the BTD shall be ex officio members of the TMA. The Authority and the BTD shall use reasonable efforts to cause all other owners of real property (other than owners of residential dwelling units) located within a Non-PDA Project or a Northern Avenue PDA, to become members of the TMA. The cost of operating the TMA, including staffing costs, shall be divided equitably among its members. In their capacity as members of the TMA, the Applicant and BMC shall ensure that there is sufficient initial staffing of the TMA.

If the TMA is not established or extended to include all members listed above or if the TMA ceases to exist, references to members of TMA shall include all developers and owners of real property which falls within the definitions of PDA Development and Non-PDA Development. The Applicant, in its capacity as a member of the TMA, shall, to the extent

possible, cause to be implemented periodic monitoring by the TMA of a reasonable number of selected and Project-related intersection approaches and roadway limits (other than the Monitored Intersections), including neighborhood streets such as L Street, I Street and D Street, as recommended by the BTD.

6. Phase-Out of Monitoring and Traffic Payment Obligations. The monitoring obligations of Applicant with respect to Section 2 and Section 3 of this Section C shall terminate five years after the issuance of a certificate of occupancy for the final building to be constructed by the Applicant pursuant to the Development Plan. The Applicant's liability with respect to the Traffic Payment and Mitigation Payment (if not previously paid) shall terminate three years after the issuance of a certificate of occupancy for the final building to be constructed by the Applicant pursuant to the Development Plan. The provisions of this Section 6 shall not apply to Applicant's mitigation obligations under 4(i)(a) through 4(i)(k) above.

D. Linkage

Pursuant to section 26-3 of the Code, on March 20, 1986 the Applicant and the Authority entered into a Development Impact Project Agreement for Planned Development Area No. 23 (the "DIP Agreement"). Under the terms of the DIP Agreement, the Applicant assumed responsibility for a Development Impact Project Exaction with regard to the Project; Applicant hereby ratifies and confirms the DIP Agreement. Should the

Applicant's obligation with regard to the Development Impact Project Exaction be satisfied solely in the form of a Housing Payment Exaction, it is presently anticipated (based upon the gross floor area of the Project set forth in the "Application with Supporting Documentation" submitted in conjunction with the Development Plan) that total payments from the Applicant would equal approximately $10,000,000.

The Applicant also confirms its agreement in the DIP Agreement to assume responsibility for a Jobs Contribution Grant with regard to the Project. It is presently anticipated that the total Jobs Contribution Grant payments from the Applicant will equal approximately $2,000,000.

E. Public Benefits

1. Harborwalk and Additional Open Space. In addition to the affordable housing that Applicant has agreed to provide pursuant to Paragraph B above and the Linkage Exactions to be provided by Applicant as set forth in Paragraph D above, Applicant shall provide as part of the Project a significant number of public benefits, including five major publicly accessible open spaces: (1) Harborwalk along the water's edge, (2) a waterfront park adjacent to Harborwalk, (3) an oval near the center of the Project Area, (4) a Harborwalk overlook adjacent to the central oval and Harborwalk, and (5) the canal with canal promenades lining its edges. These open spaces are shown on Exhibit IV attached to the Development Plan.

The Fan Pier segment of the Harborwalk will extend along the entire western, northern and eastern edges of the Project Area as defined in the Development Plan and will provide a natural environment in which pedestrians can view the activities in the harbor. The public waterfront park adjacent to Harborwalk will afford a large waterfront open space for public use.

In addition, the Applicant shall provide as part of completion of the entire Project, seawall restoration (in addition to the canal), publicly accessible sidewalks, streets, and vehicular and pedestrian bridges.

2. Betterment of Area-wide Sewer, Water and Drainage Systems. The Applicant further agrees to implement the commitments made by the Applicant and BMC in the Infrastructure Report. Specifically, Applicant and BMC agree to construct at their expense all water and sewer facilities that are directly related to the Project and the adjacent Pier 4 Project and that are necessary to tie such Projects into the BWSC systems. As part of this commitment the Applicant and BMC agree to reconstruct the existing sanitary sewer facilities in existing Northern Avenue as set forth in the Infrastructure Report. In order to improve the water quality in Boston Harbor, the Applicant will construct a storm drainage system on the site, including pollution abatement facilities such as oil and gas separators or other comparable devices approved by the BWSC. The Applicant and BMC will upgrade the existing high service and low service

water mains in existing Northern Avenue. For the high service water system in existing Northern Avenue, the Applicant and BMC will fund the cleaning and cement lining of the existing 16-inch service main. For the low service water system, the Applicant and BMC will construct a new 12-inch service line in the existing Northern Avenue for the length of the Fan Pier and Pier 4 project sites.

The Applicant and BMC further agree to meet the recommendations for 2:1 infiltration and inflow ("I and I") reduction by a combination of off-site and on-site improvements. To the extent necessary to achieve this 2:1 I and I goal, the Applicant and BMC agree to pay for reconstruction of sanitary sewer facilities in existing Northern Avenue; in addition, as set forth in the Infrastructure Report, the Applicant and BMC agree to pay for the reconstruction of a portion of the drainage and sewer facilities in the street grid south of the existing Northern Avenue to the extent that such reconstruction is needed (in addition to reconstruction of existing Northern Avenue) to satisfy the 2:1 I and I goal for the Project and the Pier 4 project, assuming such improvements are not funded by city, state or federal roadway or infrastructure reconstruction grants. The Applicant, in conjunction with BMC, also agrees to study water conservation measures that can be taken on the Site and which go beyond the State Building Code requirements. Applicant and BMC shall continue to work with the Boston Water and Sewer Commission ("BWSC") as part of

this program. The Applicant and BMC have further agreed to work toward an agreement with Massport to allow, in the short term, use by the Project and the Pier 4 project of Massport's 18-inch sewer pipe in existing Northern Avenue, and, in the long term, an easement for a new sewer line across the Commonwealth Flats to be constructed by the Applicant, BMC and others who will use the sewer.

As set forth in the Infrastructure Report, the Applicant and BMC agree to fund replacement of a portion of the North Branch of the South Boston Interceptor at the intersection of A Street and West First Streets, the scope of replacement to be as previously agreed by the Applicant, BMC and BWSC; peak flows in this Interceptor are now restricted at A Street as it passes beneath a storm drain.

BWSC, Applicant and BMC have confirmed that the sewer, water and drainage system improvements committed to by Applicant and BMC will contribute to the betterment of area-wide service and will help contribute to the improvement of water quality in Boston Harbor.

Where infrastructure commitments made by the Applicant in this Agreement and in the Infrastructure Report are parallel to those by BMC, the Applicant and BMC shall share costs and other responsibilities in proportion to the infrastructure impacts of their respective developments as mutually agreed between the Applicant and BMC. The Applicant agrees to fully construct the infrastructure necessary for its Project but shall not be responsible for the

infrastructure commitments for an adjacent project that does not proceed.

3. Public Cultural Facility. The Applicant intends to donate to the City a sub-leasehold interest in a building site (Parcel E) for a new cultural facility. The program for this site will be developed jointly by the City and the Applicant, in conjunction with input from the CAC.

F. Design Review

1. The Applicant and the Authority hereby agree and confirm that the design review process required by the Development Plan to be observed by the parties ("Design Review Process") shall be as set forth in the Development Review Procedures attached to the Cooperation Agreement, including reviews of the Development Concept, Schematic Review, Design Development and Contract Documents. The Applicant and the Authority hereby further agree that, as mutually agreed upon by the parties, the Design Review Process may be undertaken separately for each building, or for any group of buildings to be constructed in the Project Area. Capitalized terms used and not defined herein shall have the meanings ascribed to them in the Design Review Process.

2. Throughout the Design Review Process discussed in Section 1 above, it shall be the Applicant's responsibility to promptly notify the Authority of proposed changes to public lobbies and arcades visible from the exterior of buildings, to open spaces and landscaping and to exterior

features of buildings from previously approved submissions (other than refinements of details generally consistent with such previously approved submissions), and to obtain approval from the Authority prior to incorporating them into the drawings and specifications. The Authority shall perform its functions under this provision promptly and with all reasonable dispatch as set forth in the Cooperation Agreement.

3. Once Contract Documents have been approved, the only further submissions to be made by the Applicant to the Authority for review and approval hereunder will be contract addenda and requests for change orders in the construction of those items subject to the Design Review Process which differ from or were not fully described in the Contract Documents. The Authority shall perform its functions under this provision promptly and with all reasonable dispatch as set forth in the Cooperation Agreement.

4. Except as otherwise provided herein, the Authority will review and act upon the submissions required by the Design Review Process in the manner set forth in this Section 4. If the Authority finds any such submission(s) inconsistent with the previous submissions, it shall notify the Applicant of the respects in which the same is deemed to be inconsistent. If the Authority finds the submission(s) consistent, it shall so notify the Applicant and indicate the same thereon. The Authority shall perform its functions under this Agreement promptly and with all reasonable

dispatch, and shall use its best efforts to notify the Applicant of its approval or disapproval (and its reasons therefor) of such submissions within ten (10) business days after receipt thereof. The Authority may waive such of its procedures and requirements as it deems appropriate.

5. Section 11 of the original Cooperation Agreement is hereby deleted in its entirety.

G. Compliance with Development Plan

1. Applicant's Development Plan represents a stage in the planning process for a large-scale development project between the Master Plan stage and stage at which the final plans and specifications (the "Final Plans and Specifications") are submitted to the Authority pursuant to section 3-1A of the Code for final design review approval and certification as to consistency with the Development Plan. The Applicant will proceed with the planning and design for the Locus in compliance with the Development Plan. It is the intention of the Development Plan to establish limits of development to be permitted in the Project Area and to ensure provision of certain public amenities. A finding of consistency with the Development Plan may be made by the Authority pursuant to Section 3-1A of the Code for all or any portion of the Project provided the Project or any portion thereof complies with the following essential elements of the Development Plan (the "Plan Requirements"):

(1) Location and Appearance of Structures: All major above-grade buildings forming a part of the Project shall be located wholly within one of the lots referenced on Table A of the Development Plan. Each such above-grade building shall have a height and gross floor area not in excess of those permitted on Table A of the Development Plan for the respective lot on which such building is located. The facades of the Project's major buildings shall be constructed principally of patterned stone and brick.

(2) Open Spaces and Landscaping: In order to ensure that adequate open space is provided on the Site, no more than 40% of the Site shall be covered by the footprint of above-grade buildings. The landscape design in the Project Area shall reinforce the view corridors established by the street grid and building walls.

(3) Uses: Principal uses in the Project Area shall be consistent with those set forth in Table A of the Development Plan. These uses include residential, open space, marina, cultural, hotel, retail and office uses. Any substantial increase in the intensity of development of a particular use in the Project as a whole in excess of the limits permitted on Table A shall require the approval of the Authority and the approval of the Boston Zoning Commission, in each case after public notice and hearing.

(4) Densities: The FAR for the entire Project shall not exceed 4.25 and the FAR for the commercial office and retail components of the Project shall not exceed 2.25, both

determined as set forth in the Proposed Densities section of the Development Plan.

(5) Traffic Circulation: The pattern of streets open to the public in the Project Area shall be substantially similar to that set forth on Exhibit IV to the Development Plan.

(6) Parking and Loading Facilities: No more than 2,600 vehicular parking spaces, nor less than 2,200 vehicular parking spaces, shall be located below-grade in the Project Area. Loading bays shall be provided on each lot at least to the extent set forth on Table A of the Development Plan.

(7) Dimensions of Structures: Building heights and gross floor areas on each respective lot shall not exceed those permitted on Table A of the Development Plan.

(8) Public Benefits: Public benefits in the Project Area shall include the developer's Affordable Housing Commitment, Linkage Commitment, Jobs Commitment (all as defined in the Development Plan) and the following publicly accessible amenities: Harborwalk, Harborwalk overlook, boardwalk, waterfront park, oval, transient slips within the marina, canal and canal walk, substantially as shown on Exhibit IV to the Development Plan. Design of any portion of the Project so as to preclude inclusion of one of the above-referenced publicly accessible amenities shall require the approval of the Authority and the approval of the Boston Zoning Commission, in each case after public notice and hearing.

If the Final Plans and Specifications do not comply with the Plan Requirements, the Development Plan must be amended before approval of the Final Plans and Specifications by the Authority. Pursuant to section 3-1A of the Code, such amendment to the Development Plan would require the approval of the Authority and the approval of the Boston Zoning Commission, in each case after public notice and hearing.

2. Any building contemplated by Applicant's approved Development Plan shall be deemed completed when the Applicant has substantially completed construction of the exterior of the building, the public lobbies, entrances, arcades and open spaces, all in accordance with approved construction documents and the same are substantially ready for occupancy, except for interior work to be performed to tenant's specifications; any other improvement so contemplated shall be deemed completed when available for its intended purpose. Upon completion of any building or other improvement the Authority shall issue to the Applicant a Certificate of Completion, which shall be in recordable form and shall be conclusive evidence that said building or other improvement has been completed in accordance with the approved Development Plan.

3. Upon such completion of all buildings and other improvements comprising Applicant's development, the Authority shall issue to the Applicant a Certificate of Completion in recordable form, which shall be conclusive evidence that Applicant's development has been completed in

accordance with the approved Development Plan, all obligations to the Authority hereunder and thereunder having been fulfilled.

4. The Authority shall issue a Certificate of Completion within thirty (30) days after Applicant's request for a Certificate of Completion. If the Authority shall refuse or fail to issue any such Certificate in accordance with the provisions of this Paragraph, within said 30 days after Applicant's request the Authority shall provide the Applicant with a written statement, indicating with specificity in what respect the Applicant has failed to complete the building or other improvement in accordance with the approved Development Plan or is otherwise in default on its obligations to the Authority and what measures or actions will be necessary, in the opinion of the Authority, for the Applicant to take or perform in order to obtain such a Certificate of Completion; upon compliance by the Applicant with the requirements of such statement, the Authority shall issue such Certificate of Completion.

5. Whenever any document or proposed action by the Applicant is submitted by it to the Authority, and the Applicant has been notified in writing by the Authority that the same is approved or is satisfactory, such determination shall be conclusively deemed to be a final determination by the Authority with respect to such particular document or proposed action for which such approval or notice of satisfaction was given.

6. Whenever the consent or approval of the Authority or the BTD is required hereunder, under the Cooperation Agreement, under the Authority's Development Review Procedures, or otherwise, such consent or approval shall not be unreasonably withheld or delayed, or wherever there is a requirement that any thing, act or circumstance shall be satisfactory to the Authority or the BTD or shall be done or performed to the Authority's or the BTD's satisfaction or any other requirement of similar import, the Authority and the BTD covenant not to be unreasonable with respect thereto.

The Cooperation Agreement, as expressly modified by this First Amendment, is ratified and confirmed and shall remain in full force and effect. In the event of any inconsistency between the original Cooperation Agreement and this First Amendment, this First Amendment shall govern.

Approved as to Form:

____

BOSTON REDEVELOPMENT AUTHORITY

By:______________________________
Stephen Coyle, Director

HBC ASSOCIATES

By: Carpenter Fan Piers
Limited Partnership

By: FP, Inc., Its general
partner

By: ______________________
Richard L. Friedman,
President

By: HT-Boston, Inc.

By: ____________________________
Richard Schulze,
President

The City of Boston, acting by and through its Transportation Department, joins herein for the purpose of confirming its approval of the TAP as required by Paragraph 5 of the Cooperation Agreement and for the purpose of acknowledging its obligations hereunder.

BOSTON TRANSPORTATION DEPARTMENT

By: _______________________________
Richard Dimino, Commissioner

BOSTON REDEVELOPMENT AUTHORITY

March 16, 1987

DEVELOPMENT PLAN
for
PLANNED DEVELOPMENT AREA NO. 23

FAN PIER PROJECT

Bounded by Fort Point Channel,
Boston Harbor, Northern Avenue
and Planned Development Area No. 24

Development Plan: On February 12, 1986, the Boston Redevelopment Authority (the "BRA") approved a master plan (the "Master Plan") for the development of the Fan Pier in South Boston (the "Project") pursuant to section 3-1A of the Boston Zoning Code (the "Code"). Acting in response to a petition from the BRA, the Boston Zoning Commission (the "BZC") voted on March 21, 1986 to approve a map amendment to the Code designating the Fan Pier as Planned Development Area No. 23. The Zoning Commission's action was approved by the Mayor on March 27, 1986. In accordance with section 3-1A of the Code, this Development Plan sets forth information on the Project including the proposed location and appearance of structures, open spaces and landscaping, proposed uses of the Project site, densities, proposed traffic circulation, parking and loading facilities, access to public transportation and proposed dimensions of structures (the "Development Plan"). As a result, this Development Plan represents a stage in the planning process for a large-scale development project between the Master Plan stage and the stage at which final plans and specifications for the Project (the "Final Plans and Specifications") are submitted to the BRA pursuant to Section 3-1A of the Code for final design review approval and certification as to consistency with this Development Plan. This Development Plan consists of ten pages of text and tables plus attachments designated Exhibits I through IV. All references to this Development Plan contained herein shall pertain only to such ten pages and attachments.

Developer: The developer of the Project is HBC Associates, a joint venture of HT-Boston, Inc., a Delaware corporation, and Carpenter Fan Piers Limited Partnership, a Massachusetts limited partnership (successor to the interest of Carpenter Properties, Inc. in HBC Associates), its successors and assigns. HT-Boston, Inc., an affiliate of Hyatt Corporation, is controlled by the Pritzker family of Chicago. The general partner of Carpenter Fan Piers Limited Partnership is FP, Inc., an affiliate of the Boston-based Carpenter & Company, Inc. which is controlled by Richard L. Friedman. Within the City of Boston, an affiliate of FP, Inc. was co-developer and is co-owner of 175 Federal Street. Neither HT-Boston nor its affiliates has any other current or former projects in Boston.

Site Description: The Project will be located within the parcel of land described in Exhibit I attached to this Development Plan (the "PDA Area"). The PDA Area includes the northern half of the existing Northern Avenue, approximately 50 feet in width, as it abuts Piers 1, 2 and a portion of Pier 3. It is anticipated that the existing Northern Avenue will be narrowed and that the resulting remnant parcel along the northern side of this roadway will be purchased from the City by Anthony's Pier Four, Inc. and subsequently ground leased to the developer. In anticipation of these events, the boundary of Planned Development Area No. 23 (as approved by the BRA, the BZC and the Mayor), and the area included in the PDA Area, has been extended to the centerline of the existing Northern Avenue. The northernmost 15-foot-wide strip of Northern Avenue as it abuts Piers 1, 2 and a portion of Pier 3 is referred to herein as the "Remnant Parcel". The PDA area, less that portion of Northern Avenue not included in the Remnant Parcel, is referred to herein as the "Site." The area on which the Project is eventually constructed, whether or not the Remnant Parcel is acquired from the City and included in that area, is referred to herein as the "Project Area."

Proposed Location and Appearance of Structures: Nine major buildings will be constructed in the Project Area. Five of the buildings, to be located on the parcels designated as Lots A through E on the plan attached to this Development Plan as Exhibit II, will be located to the south of the canal that will traverse the site from east to west. The remaining four buildings, to be located on the parcels designated as Lots F through H and the Hotel Lot on the plan attached to this Development Plan as Exhibit II, will be located to the north of the canal. The proposed locations of the major buildings in the Project are shown on Exhibit II. The locations of these buildings are provided on Exhibit II for illustrative purposes only. The locations and configurations of the structures set forth in the Final Plans and Specifications shall conform to the Plan Requirements as hereinafter defined.

The buildings in the Project Area shall have heights and gross floor areas not in excess of those permitted on Table A of this Development Plan. To achieve a reduced scale on the waterfront, the Project's buildings as a group will, with the exception of structures on the Hotel Lot, have reduced heights towards the water's edge. Aligned building setbacks and horizontal articulations will help to create a cohesive ensemble of buildings. In keeping with the traditional building materials employed in Boston, the facades of the Project's buildings shall be constructed principally of patterned stone and brick. The elevations attached to this Development Plan as Exhibit III illustrate the general appearance of the structures presently proposed for the Project. These elevations are provided for

illustrative purposes only. The appearance of the structures set forth in the Final Plans and Specifications shall conform to the Plan Requirements as hereinafter defined.

Proposed Open Spaces and Landscaping: The Project includes five major open spaces: (1) Harborwalk along the water's edge, (2) a waterfront park adjacent to Harborwalk, (3) an oval near the center of the Project Area, (4) a Harborwalk overlook adjacent to the central oval and Harborwalk, and (5) the canal with canal promenades lining its edges. These proposed open spaces are shown on Exhibit IV attached hereto.

The Fan Pier segment of the BRA's Harborwalk will extend along the entire western, northern and eastern waterfront of the Project Area and will provide a natural environment in which pedestrians can view the activities in the harbor. The Harborwalk will include a boardwalk along the marina edge. The public waterfront park adjacent to Harborwalk will afford a large waterfront open space for public use. Located in the center of the Project Area, the oval will serve as an attractive terminus to Pittsburgh Street and will open out onto a Harborwalk overlook at the water's edge. The canal, running east and west across the site, will introduce additional water views to the Fan Pier. Pedestrian walkways lined with stores and restaurants will parallel the canal. The canal will be aligned with the Custom House Tower in downtown Boston, commanding views of this historic landmark for most of the length of the canal promenades and visually integrating the Project with Boston's historic downtown. The landscape design in the Project Area will reinforce the view corridors established by the street grid and building walls. Trees and other plantings will be employed to soften the pedestrian environment. A variety of paving and landscape materials will be used to differentiate and enrich the promenades, paths and walkways throughout the Project.

Proposed Uses of the Area: The uses proposed for the Project Area include residential, retail, office, hotel, marina, recreational and associated uses. The principal uses proposed for each lot in the Project Area are set forth in Table A.

Proposed Densities: The underlying zoning district for the Site is W-2, Waterfront Industrial, with a maximum floor area ratio ("FAR") of 2.0, based upon Code definitions. Under the Code definitions of "floor area ratio" and "lot area", the construction of the canal, the street system and other public areas will result in increases in the FAR for the Project because such areas are excluded from "lot area" upon which FAR is calculated. This Development Plan establishes an overall FAR of 4.25 based upon the ratio of (a) 3,102,593 gross square feet of proposed development

(not including the gross square footage of any cultural facility that may be located on Lot E, the 50,000 gross square feet permitted in order to allow the developer to satisfy its Affordable Housing Commitment as defined herein and the gross square footage of the parking facilities) to (b) 730,022 square feet consisting of 712,622 square feet of existing pier structure and land (including the Remnant Parcel whether or not acquired from the City, which Remnant Parcel contains 18,372 square feet) and 17,400 square feet of boardwalks and pier structures to be constructed as part of the Project (together, the "Overall FAR Area"). This Development Plan also establishes a maximum FAR for the commercial office and retail components of the Project of 2.25 based upon the ratio of 1,627,848 square feet of the maximum proposed commercial office and retail development (not including up to 50,000 gross square feet permitted to allow the developer to satisfy its Affordable Housing Commitment) to the Overall FAR Area. The division of the Project Area into a number of zoning lots to facilitate financing may result in a higher FAR for some components of the Project when analyzed separately, provided that in the aggregate the Project conforms to the overall FAR and the commercial office and retail FAR established above.

Proposed Traffic Circulation: Two vehicular/pedestrian bridges will provide automobile access to the portion of the Project Area north of the canal. Pedestrians will have access to the portion of the Project Area to the north of the canal by way of these vehicular/pedestrian bridges, as well as by way of two bridges expressly for pedestrian use. These pedestrian bridges will form important links in the Harborwalk system. Vehicular and pedestrian access to the Project Area will be by way of the existing Northern Avenue and a combination of proposed new streets. The proposed pattern of streets and pedestrian walkways open to the public in the Project Area is set forth on Exhibit IV hereto.

Proposed Parking and Loading Facilities: The Project will include a parking garage that can accommodate approximately 2,500 cars below grade. Parking spaces, loading bays and other service loading facilities will be provided as set forth on Table A. The Project will include loading docks in the parking facilities below the structures along Northern Avenue, with off-street grade-accessed loading servicing the buildings north of the canal.

Proposed Access to Public Transportation: The MBTA stop located nearest the Project Area is the South Station stop on the Red Line. The Project Area will also be served by commuter and inter-city rail and bus service terminating at South Station. Numerous MBTA bus routes also terminate at South Station. The developer has submitted to the BRA with this Development Plan a feasibility study of water transportation links within the Boston Inner Harbor.

Proposed Dimensions of Structures: The dimensions of the major structures proposed for the Project are summarized on Table A.

Public Benefits: The Project is of critical importance to the revitalization of Boston's waterfront and will make significant economic contributions to the City through the development of infrastructure, the provision of construction and permanent jobs, the payment of linkage fees, and increased real estate taxes. It is estimated that total linkage payments may equal as much as $12.8 million, $10.7 million of which will be in the form of housing linkage and $2.1 million of which will be in the form of jobs linkage. It is also estimated that real estate taxes generated from the Project Area will increase from the existing $297,731 to approximately $12 million once the Project is complete. The developer will be contributing an unparalleled addition to the City's infrastructure, including street system expansion and seawall restoration, in addition to the canal, vehicular and pedestrian bridges, Harborwalk, canal walks, marina docks, marine services, parks and a Harborwalk overlook. The Project reflects the waterfront location of the site and includes water-dependent uses. The Project further respects the public goals and guidelines established for waterfront development in Boston, and draws its design from Boston's larger urban context to provide view corridors, public open spaces, and water views.

The developer plans to provide a carefully balanced and interrelated plan of public benefits. In the area of jobs, in addition to the job linkage commitment spelled out above to be used to fund job training programs, the developer will work with the BRA and the Mayor's Office of Jobs and Community Services and the Citizen's Advisory Committee to develop a Boston Resident's Construction Employment Plan, formulate an Employment Opportunity Plan, and implement a South Boston and local business and merchant preference outreach program. The development of the Project will result in the creation of a very substantial number of affordable housing units. 100 of these affordable housing units will be constructed by the developer within the Site and, in the discretion of the BRA and the Housing Trust, portions of developer's linkage funds may be made available to assist in the creation of up to 150 affordable housing units on adjoining or nearby sites. In addition, the developer will make a $20,000 contribution towards a housing study for the artists' community. The linkage, jobs and affordable housing commitments (respectively, the "Linkage Commitment", "Jobs Commitment" and "Affordable Housing Commitment"), are more fully set forth in the First Amendment to the Cooperation Agreement for Planned Development Area No. 23 to be entered into between the BRA and the developer.

Design Review: Section 3-1A of the Code provides that no structure shall be erected, reconstructed, or structurally changed or extended in a planned development area unless all drawings and

specifications therefor have been subjected to design review and approved by the BRA. In the Cooperation Agreement for Planned Development Area No. 23 dated March 20, 1986 (the "Cooperation Agreement"), which is currently being supplemented to incorporate obligations of the developer with regard to affordable housing, traffic mitigation and jobs, the developer agreed to submit the design of the Project to the BRA's design review process. This ongoing, multi-step design review process is set forth in the BRA's Development Review Procedures attached as an exhibit to the Cooperation Agreement. The design review process typically includes the review by the BRA of schematic drawings of the Project, design development materials and final contract documents and BRA approval is obtained at each step in this process. Certain portions of the Project have advanced to the stage where the BRA's approval of schematic drawings is being requested contemporaneously with the approval of the attached Development Plan. The Cooperation Agreement further requires the developer, after final design review approval, to promptly notify the BRA of proposed changes to public lobbies and arcades visible from the exterior of buildings, to open spaces and landscaping and to exterior features of buildings from previously approved design review submissions (other than refinements of details generally consistent with such previously approved submissions), and to obtain approval from the BRA prior to incorporating such changes into the drawings and specifications for the Project.

Compliance with the Plan: This Development Plan represents a stage in the planning process for a large-scale development project between the Master Plan stage and stage at which the Final Plans and Specifications are submitted to the BRA pursuant to section 3-1A of the Code for final design review approval and certification as to consistency with this Development Plan. It is the intention of this Development Plan to establish limits of development to be permitted in the Project Area and to ensure provision of certain public amenities. The developer will continue the planning and design of the Project in a manner consistent with these limitations and provision of these amenities. A finding of consistency with this Development Plan may be made by the BRA pursuant to section 3-1A of the Code for all or any portion of the Project provided the Project or such portion thereof complies with the following essential elements of this Development Plan (the "Plan Requirements"):

(1) Location and Appearance of Structures: All major above-grade buildings forming a part of the Project shall be located wholly within one of the lots referenced on Table A of this Development Plan. Each such above-grade building shall have a height and gross floor area not in excess of those permitted on Table A of this Development Plan for the respective lot on which such building is located. The facades of the Project's major buildings shall be constructed principally of patterned stone and brick.

(2) Open Spaces and Landscaping: In order to ensure that adequate open space is provided on the Site, no more than 40% of the Site shall be covered by the footprint of above-grade buildings. The landscape design in the Project Area shall reinforce the view corridors established by the street grid and building walls.

(3) Uses: Principal uses in the Project Area shall be consistent with those set forth on Table A of this Development Plan. These uses include residential, open space, marina, cultural, hotel, retail and office uses. Any substantial increase in the intensity of development of a particular use in the Project as a whole in excess of the limits permitted on Table A shall require the approval of the BRA and the approval of the Boston Zoning Commission, in each case after public notice and hearing.

(4) Densities: The FAR for the entire Project shall not exceed 4.25 and the FAR for the commercial office and retail components of the Project shall not exceed 2.25, both determined as set forth in the Proposed Densities section of this Development Plan.

(5) Traffic Circulation: The pattern of streets open to the public in the Project Area shall be substantially similar to that set forth on Exhibit IV to this Development Plan.

(6) Parking and Loading Facilities: No more than 2,600 vehicular parking spaces, nor less than 2,200 vehicular parking spaces, shall be located below-grade in the Project Area. Loading bays shall be provided on each lot at least to the extent set forth on Table A of this Development Plan.

(7) Dimensions of Structures: Building heights and gross floor areas on each respective lot shall not exceed those permitted on Table A of this Development Plan.

(8) Public Benefits: Public benefits in the Project Area shall include the developer's Affordable Housing Commitment, Linkage Commitment, Jobs Commitment and the following publicly accessible amenities: Harborwalk, Harborwalk overlook, boardwalk, waterfront park, oval, transient slips within the marina, canal and canal walk, substantially as shown on Exhibit IV hereto. Design of any portion of the Project so as to preclude inclusion of one of the above-referenced publicly accessible amenities shall require the approval of the BRA and the approval of the Boston Zoning Commission, in each case after public notice and hearing.

If the Final Plans and Specifications do not comply with the Plan Requirements, this Development Plan must be amended before approval of the Final Plans and Specifications by the BRA. Pursuant to section 3-1A of the Code, such amendment to this

Development Plan would require the approval of the BRA and the approval of the Boston Zoning Commission, in each case after public notice and hearing.

Other Documents: The document entitled "Supporting Documentation Section" attached hereto, and the reports entitled "Transportation", "Project Benefits", "Infrastructure", "Inner Harbor Ferry Feasibility Study" and "Urban Design" which are being submitted to the BRA simultaneously with this Development Plan, set forth background information on the proposed plans for the Project, and as such do not constitute a part of this Development Plan.

TABLE A
DIMENSIONS AND USES

Lot[1]	Minimum Number Loading Bays	Lot Area Not to Exceed[1]	Building Height (feet) Not to Exceed[2]	Principal Uses on Lot	Gross Floor Area of Buildings on Lot Not to Exceed[5]
A	1	38,354	325	Office Retail	494,590 15,570
B	3	39,407	122	Office Retail	169,630 21,700
C	3	42,361	122	Office Retail	159,930 13,610
D	4	59,052	334	Office Retail	581,610 42,280
E	0	25,821	110	Cultural	110,000[3]
F	1	55,448	220	Residential Retail	426,520 44,000
G	1	49,798	188	Residential Retail	250,460 10,420
H	0	42,084	131	Residential	149,750
Hotel	4	182,788	450	Hotel Retail	667,909 24,508
Harborfront I	0	13,231	-[4]	Open Space	-[4]
Harborfront II	0	66,856	-[4]	Open Space	-[4]
Canal	0	85,738	-[4]	Open Space	-[4]
Marina	0	124,842	-[4]	Marina	-[4]

[1] The lots referenced in this Table A are located approximately as shown on the plan attached to the Development Plan as Exhibit II. Certain lots set forth on Exhibit II may be reconfigured prior to the approval by the BRA of the Final Plans and Specifications. The BRA may find that such reconfigured lots are consistent with this Development Plan provided no less than 2/3 of the area of any reconfigured lot falls within the boundaries of such lot as set forth on Exhibit II.

[2] Heights provided are measured to the top of the highest occupiable floor of each building. In order to permit the developer to meet its Affordable Housing Commitment, and subject to the BRA's design review approval, the height of the buildings located on lots A, B, C and D may be increased by no more than 25 feet and the heights of the buildings located on lots F, G and H may be increased by no more than 30 feet.

[3] Includes approximately 3,000 square feet devoted to uses related to an adjacent docking space.

[4] It is anticipated that major above-grade buildings will not be located on this lot. However, certain structures to be located on this lot may, under a technical interpretation of the Boston Zoning Code, be considered "buildings" and thus possess building height and gross floor area.

[5] Each gross floor area figure presented is subject to an increase of up to 10% provided such increase is accompanied by a corresponding reduction in the gross floor area indicated on another lot in the Project which gross floor area on another lot in the Project is dedicated to the same princial use. In order to permit the developer to meet its Affordable Housing Commitment, and subject to the BRA's design review approval, the buildings on Lots A, B, C, D, F, G, and H may be increased in the aggregate by no more than 50,000 square feet of gross floor area. Any increase in Table C uses will result in a concomitant increase in the developer's linkage contribution. Except for the 50,000 square feet of gross floor area permitted to allow the developer to satisfy its Affordable Housing Commitment, the FAR for the Project as a whole shall not exceed 4.25 and the FAR for the commercial and office retail components of the Project shall not exceed 2.25, both as said FAR's are established in the Proposed Densities section above.

EXHIBIT I TO DEVELOPMENT PLAN

A certain parcel of land in the Commonwealth of Massachusetts, County of Suffolk, City of Boston, South Boston District, situated on the northerly side of Northern Avenue and shown as Fan Pier (Lot A) on a "Compiled Plan of Land in Boston, MA" (Two Sheets) dated 12 July 1985, revised 12 September 1985 by Survey Engineers of Boston, more particularly bounded and described as follows:

Beginning at a point at the intersection of the northerly sideline of Northern Avenue and the abandoned pier and bulkhead line of 1916 of the Fort Point Channel, said point being the southwesterly corner of the parcel; thence running

Northeasterly	1111.34 feet by a curve to the right having a radius of 910.00 feet to a point of compound curvature; thence running
Northeasterly	400.00 feet by a curve to the right having a radius of 2370.00 feet to a point of tangency; thence running
S 61 20 09 E	128.62 feet, said last three courses being by the pier and bulkhead line of 1916 (abandoned); thence turning and running
S 31 53 17 W	831.59 feet by lot B on said plan to an iron pipe on the northerly sideline of Northern Avenue; thence turning and running
N 58 06 43 W	1124.34 feet to a stone bound; thence turning and running
N 61 23 43 W	99.71 feet to the point of beginning, said last three courses being by the northerly sideline of Northern Avenue.

Containing 75,011 square meters, more or less, or 807,408 square feet, more or less, or 18.535 acres, more or less.

In addition to the foregoing, there is included the northerly half of Northern Avenue (approximately 50 feet in width) as it abuts the above described land.

Subject to and with the benefit of any and all other existing easements.

EXHIBIT II TO DEVELOPMENT PLAN - PROPOSED LOTS AND LOCATIONS OF BUILDINGS

NOTE: Locations and configurations of buildings provided for illustrative purposes only. The locations and configurations of the structures set forth in the Final Plans and Specifications shall conform to the Plan Requirements.

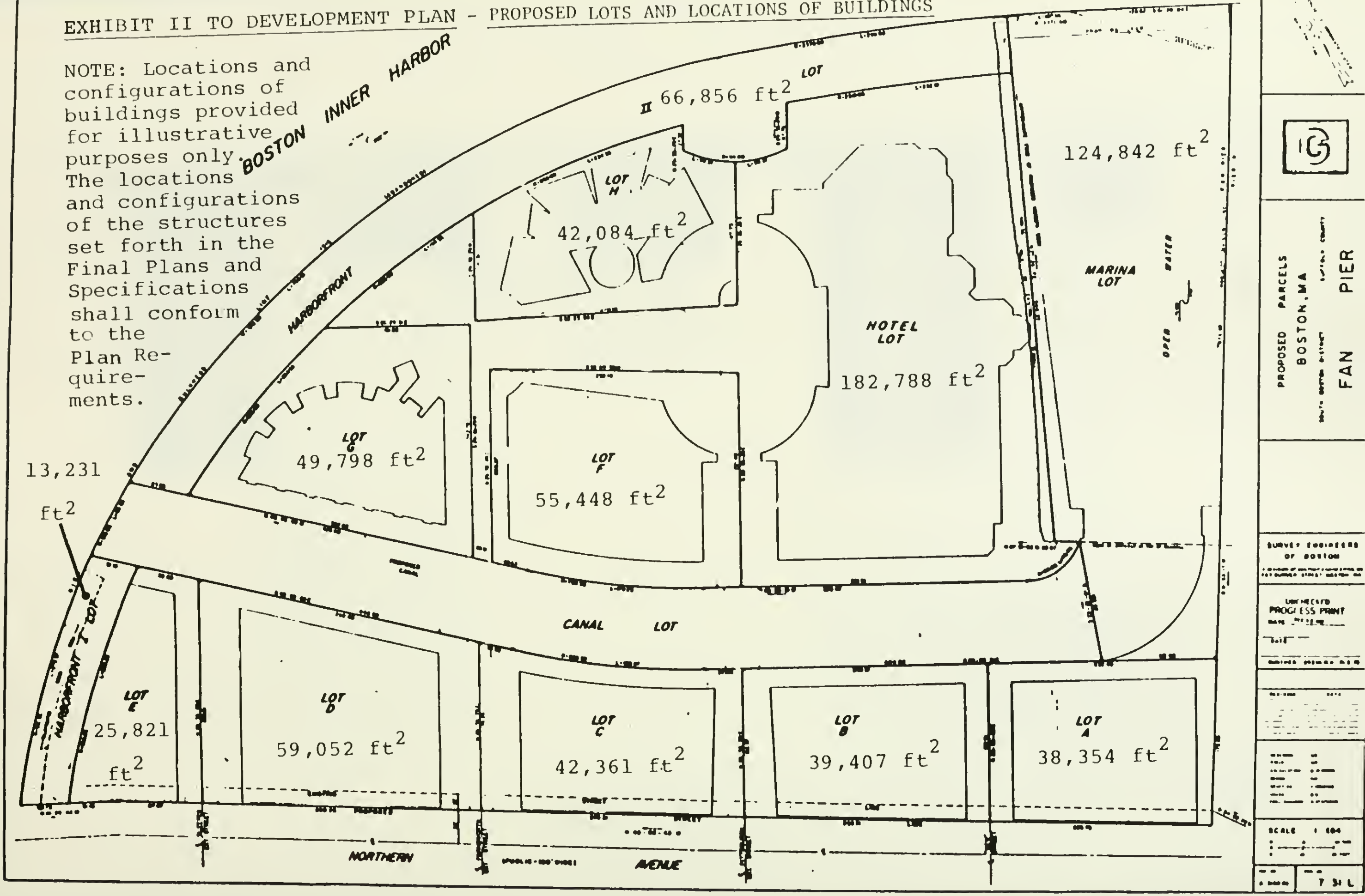
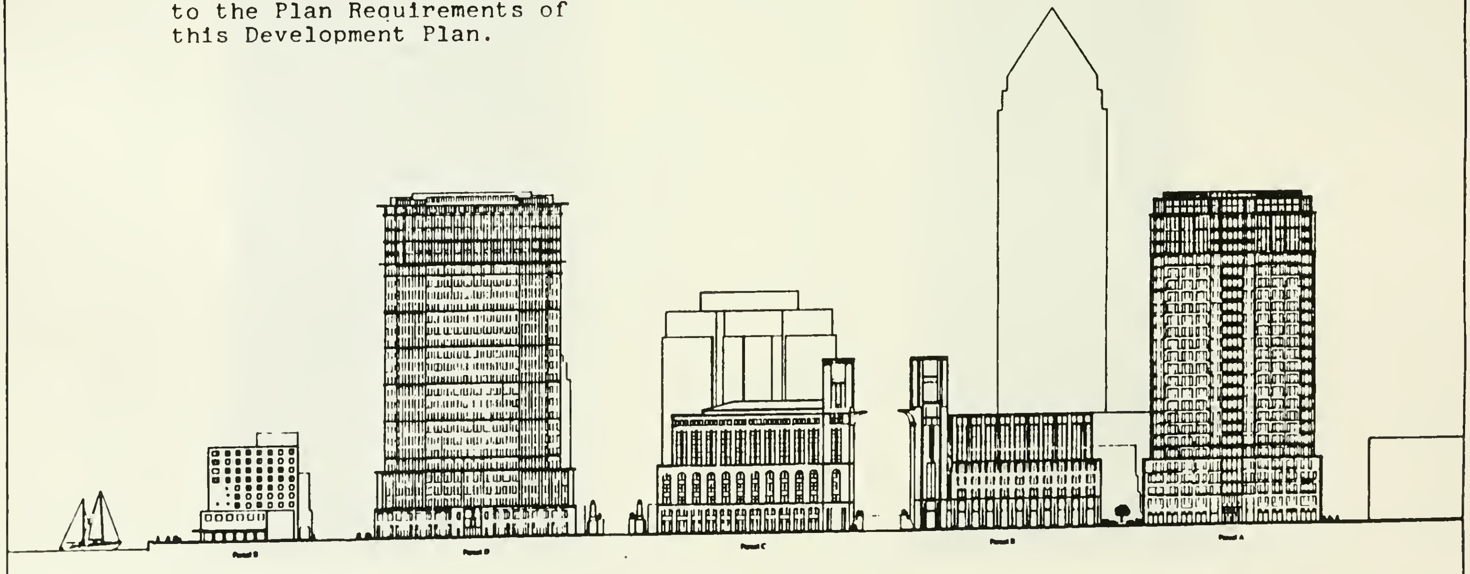


EXHIBIT III TO DEVELOPMENT PLAN - PROPOSED ELEVATIONS

NOTE: Elevations provided for illustrative purposes only. The appearance of the structures set forth in the Final Plans and Specifications shall conform to the Plan Requirements of this Development Plan.

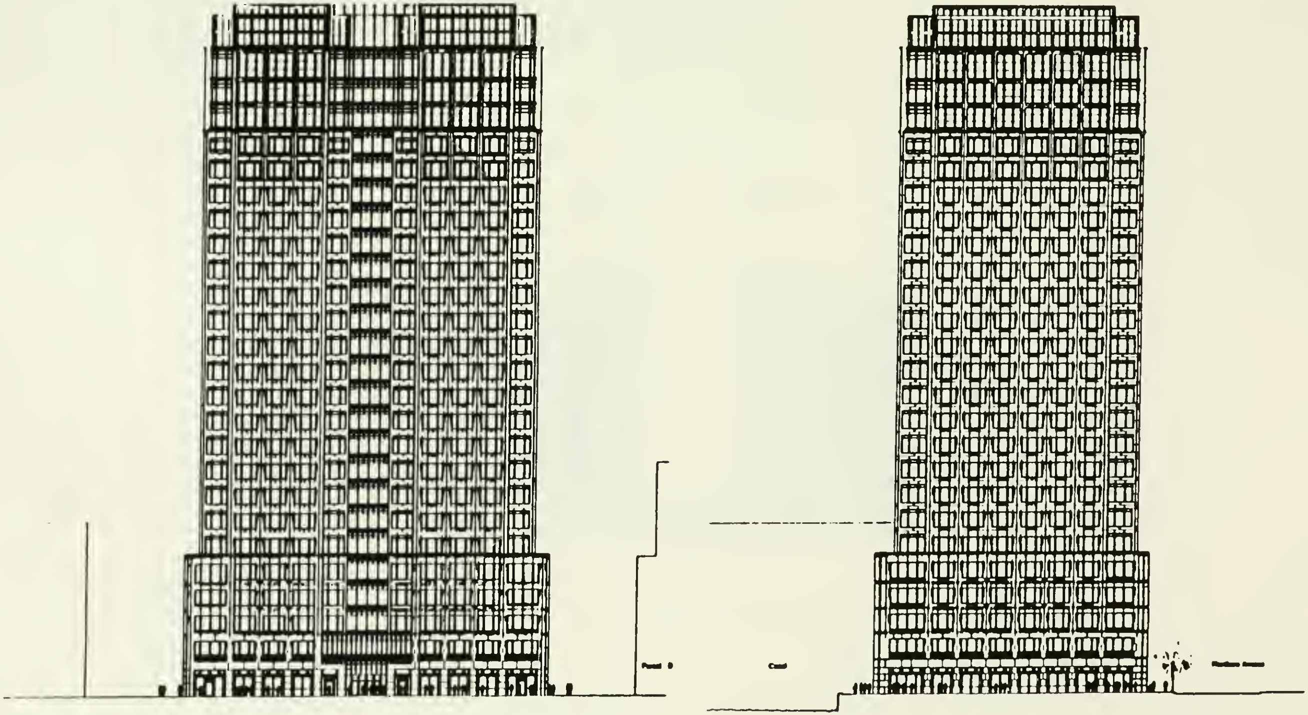


GP2 Northern Avenue Elevation

BOSTON FAN PIER MASTERPLAN

EXHIBIT III TO DEVELOPMENT PLAN - PROPOSED ELEVATIONS

NOTE: Elevations provided for illustrative purposes only. The appearance of the structures set forth in the Final Plans and Specifications shall conform to the Plan Requirements of this Development Plan.



North Elevation

West Elevation

A3 Elevations

BOSTON FAN PIER MASTERPLAN

EXHIBIT III TO DEVELOPMENT PLAN - PROPOSED ELEVATIONS

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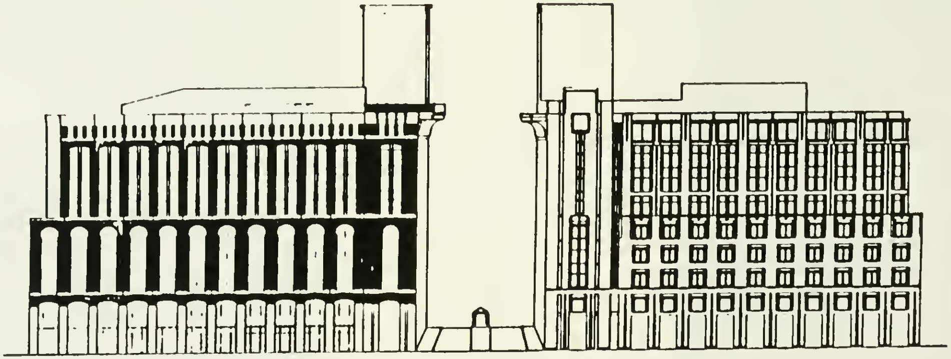


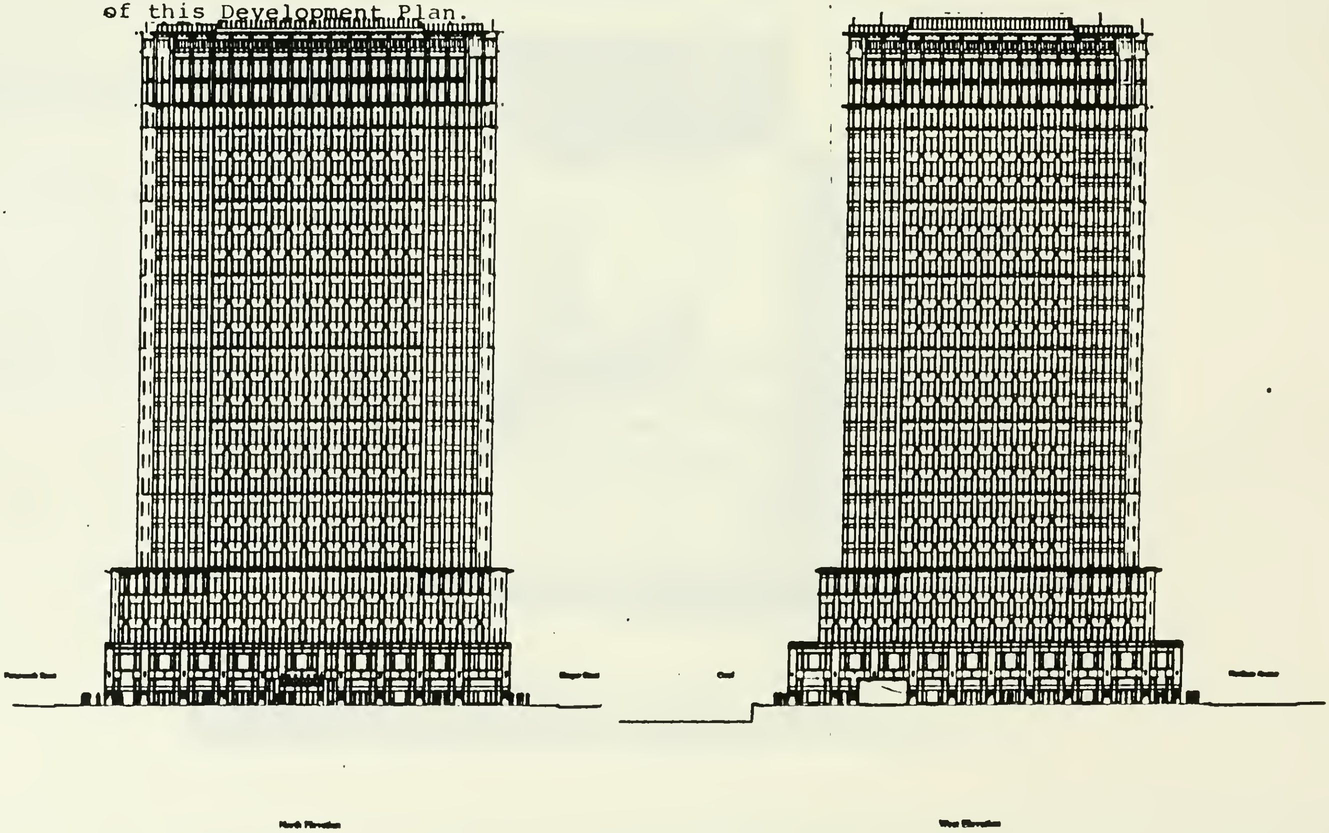
SOUTH ELEVATION

A4 ELEVATIONS

BOSTON FAN PIER MASTERPLAN

EXHIBIT III TO DEVELOPMENT PLAN - PROPOSED ELEVATIONS

NOTE: Elevations provided for illustrative purposes only. The appearance of the structures set forth in the Final Plans and Specifications shall conform to the Plan Requirements of this Development Plan.



North Elevation

West Elevation

D1 Elevations

EXHIBIT III TO DEVELOPMENT PLAN - PROPOSED ELEVATIONS

NOTE: Elevations provided for illustrative purposes only. The appearance of the structures set forth in the Final Plans and Specifications shall conform to the Plan Requirements of this Development Plan.

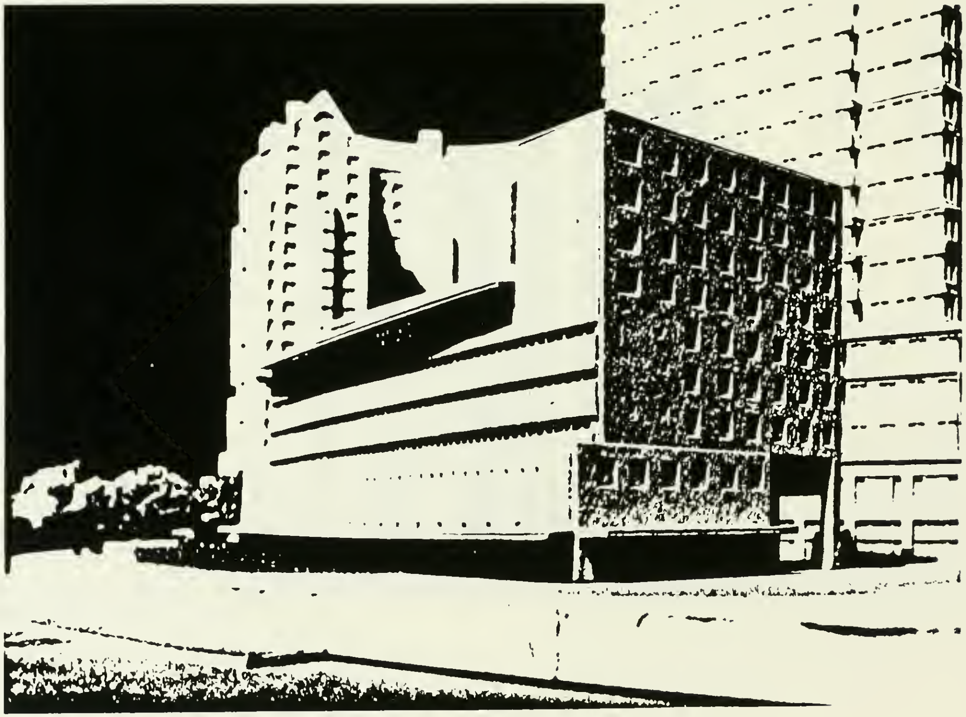
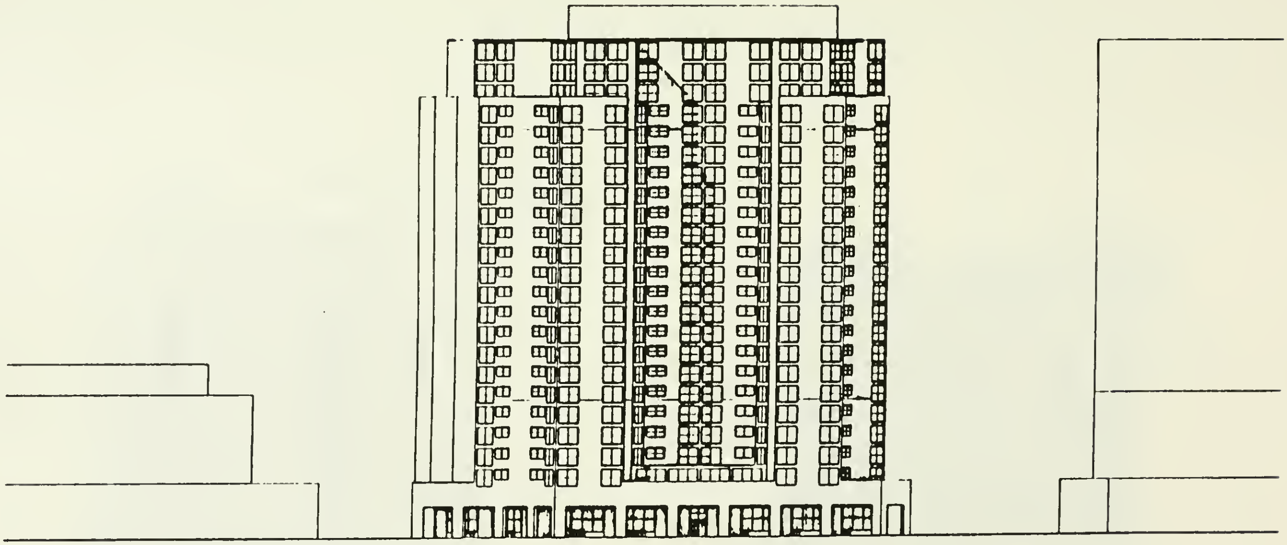


EXHIBIT III TO DEVELOPMENT PLAN - PROPOSED ELEVATIONS

NOTE: Elevations provided for illustrative purposes only. The appearance of the structures set forth in the Final Plans and Specifications shall conform to the Plan Requirements of this Development Plan.



F7 Boulevard Elevation

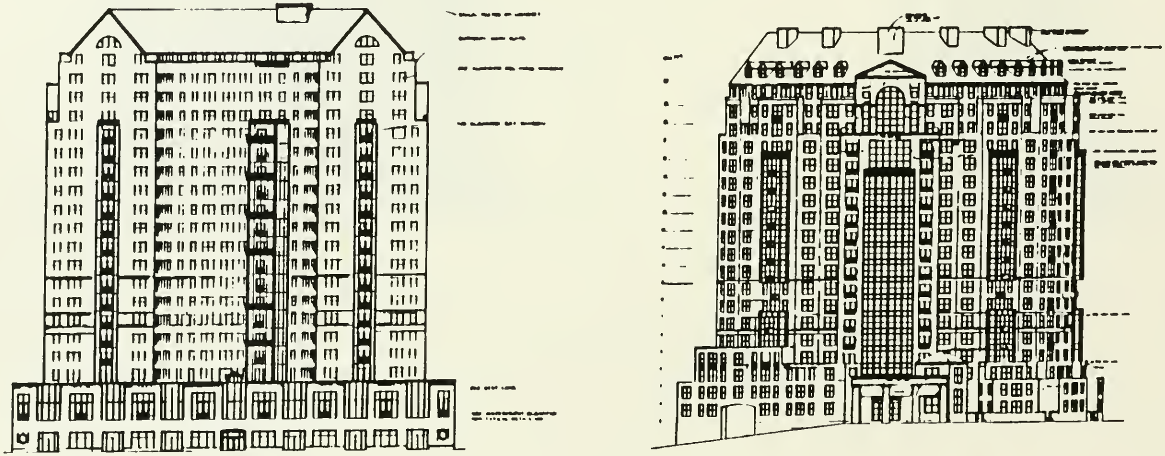
BOSTON FAN PIER MASTERPLAN

HBC Associates

VENTURI, RAUCH AND SCOTT BROWN

EXHIBIT III TO DEVELOPMENT PLAN - PROPOSED ELEVATIONS

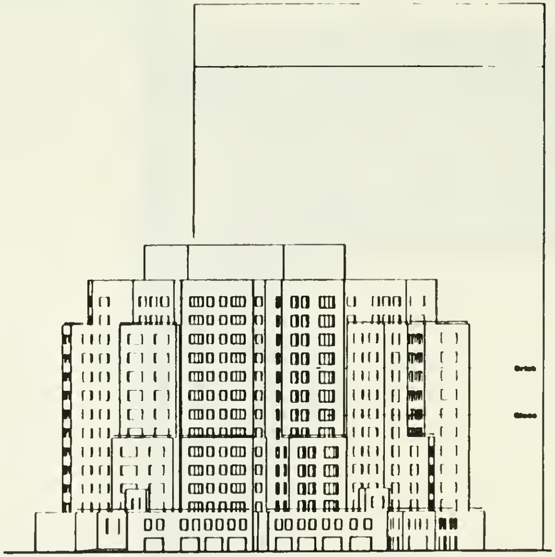
NOTE: Elevations provided for illustrative purposes only. The appearance of the structures set forth in the Final Plans and Specifications shall conform to the Plan Requirements of this Development Plan.



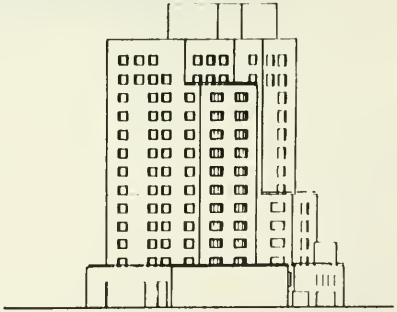
G13 Canal and Harbor Elevations

EXHIBIT III TO DEVELOPMENT PLAN - PROPOSED ELEVATIONS

NOTE: Elevations provided for illustrative purposes only. The appearance of the structures set forth in the Final Plans and Specifications shall conform to the Plan Requirements of this Development Plan.



North Elevation



East Elevation

H6 Elevations

BOSTON FAN PIER MASTERPLAN

FRANK O. GEHRY & ASSOCIATES

EXHIBIT III TO DEVELOPMENT PLAN - PROPOSED ELEVATIONS

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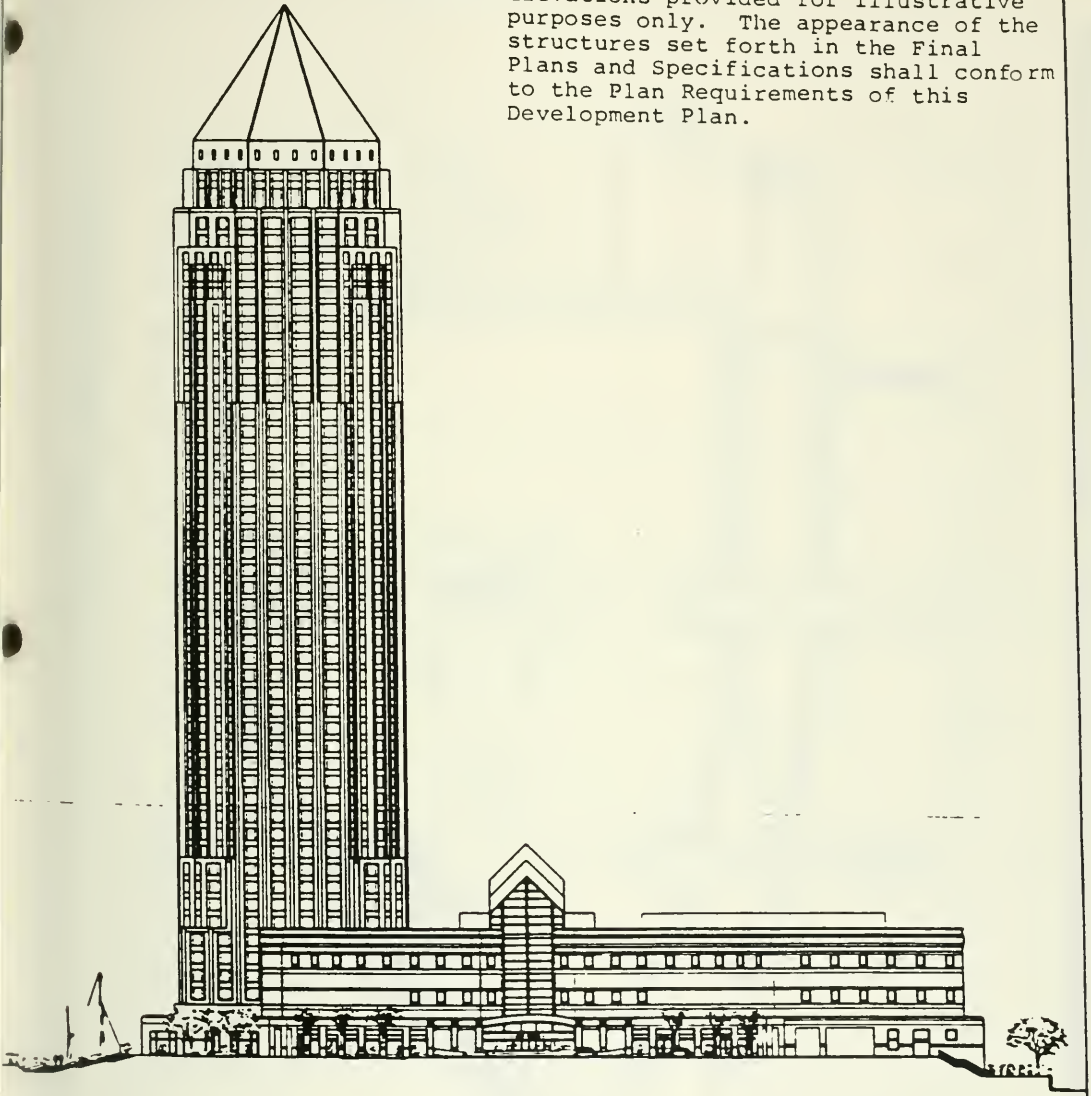
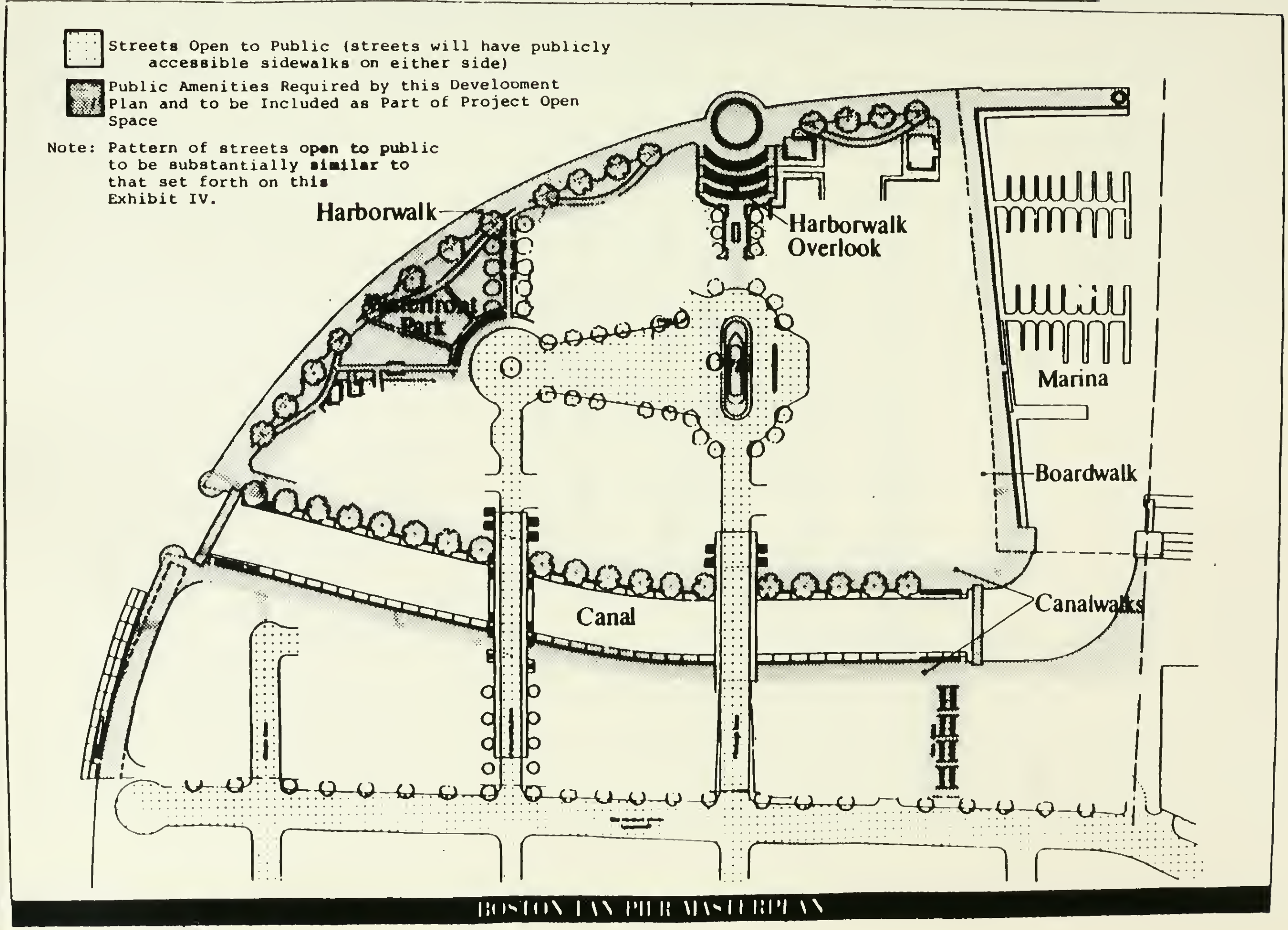


HRS Plaza Elevation

EXHIBIT IV TO DEVELOPMENT PLAN - PROPOSED OPEN SPACES AND STREETS


Streets Open to Public (streets will have publicly accessible sidewalks on either side)
Public Amenities Required by this Develooment Plan and to be Included as Part of Project Open Space
Note: Pattern of streets open to public to be substantially similar to that set forth on this Exhibit IV.
Harborwalk
Waterfront Park
Harborwalk Overlook
Marina
Boardwalk
Canal
Canalwalks
BOSTON FAN PIER MASTERPLAN

SUBSTITUTE TABLE A FOR DEVELOPMENT PLAN

for

PLANNED DEVELOPMENT AREA NO. 23

contained in

DEVELOPMENT PLAN AND APPLICATION

WITH SUPPORTING DOCUMENTATION

for

PLANNED DEVELOPMENT AREA NO. 23

dated March 16, 1987

March 23, 1987

Delete Table A of the Development Plan for Planned Development Area No. 23 contained in the Development Plan and Application with Supporting Documentation for Planned Development Area No. 23 dated March 16, 1987 and substitute therefor the following Table A.

TABLE A
DIMENSIONS AND USES

Lot[1]	Minimum Number Loading Bays	Lot Area Not to Exceed[1]	Building Height (feet) Not to Exceed[2]	Principal Uses on Lot[6]	Gross Floor Area of Buildings on Lot Not to Exceed[5]
A	1	38,354	325	Office Retail	501,895 15,792
B	3	39,407	122	Office Retail	176,324 22,532
C	3	42,361	122	Office Retail	166,887 14,179
D	4	59,052	334	Office Retail	588,630 42,787
E	0	25,821	110	Cultural	110,000[3]
F	1	55,448	220	Residential Retail	426,520 44,000
G	1	49,798	188	Residential Retail	250,460 10,420
H	0	42,084	131	Residential	149,750
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[1] The lots referenced in this Table A are located approximately as shown on the plan attached to the Development Plan as Exhibit II. Certain lots set forth on Exhibit II may be reconfigured prior to the approval by the BRA of the Final Plans and Specifications. The BRA may find that such reconfigured lots are consistent with this Development Plan provided no less than 2/3 of the area of any reconfigured lot falls within the boundaries of such lot as set forth on Exhibit II.

Project Benefits

[illegible]

[illegible]

Project Benefits

Fan
Pier
Development

Pier
4
Development

Submitted to:
The Boston Redevelopment Authority

Developers:
HBC Associates (Fan Pier)
The Boston Mariner Company (Pier 4)

MAR 16 1987

Fan Pier and Pier 4

Executive Summary

Public Benefits Report

Prepared for the Boston Redevelopment Authority

March 1987

Preface: Boston's physical and economic growth has brought about a new relationship between the public and private sectors. Because of the strong necessity to maintain a delicate balance between future economic needs and quality of life, city government has taken greater action to ensure the accountability of private developments. Given the finite availability of land and the impact of development on delivery of city services, traffic and other elements in the urban fabric, developers are being held to a greater standard. Developments must offer more public benefits to improve the quality of life for the city's current and future residents. The Fan Pier and Pier 4 developers understand their special responsibilities to Boston and have made public benefits a central element in their plans.

Aims: The Fan Pier and Pier 4 developments will transform a mostly vacant, publicly inaccessible and deteriorated site into a vital urban area through private investment. No development in the history of the city has provided public benefits of greater variety and value. Included in these benefits are substantial improvements to the city water and sewer system and resulting betterment of the harbor's water quality, as described in the separate report on Infrastructure. The developers, working in concert with community groups and city and state agencies, have sought to design a space that enhances the city and presents new possibilities for work, leisure and living for all its residents.

Specific Benefits: The public benefits of the Fan Pier and Pier 4 developments fall into five broad categories: public amenities, housing, jobs, taxes and a public cultural facility. These contributions are outlined below.

Public Amenities: The developments will provide extensive amenities to promote use of Boston Harbor, including:

- Over a mile and one-half of public walkways at the water's edge
- A canal, waterfront park, Harborpark overlook, fishing pier, and pedestrian plaza
- A marina
- Water transportation facilities and on-demand water taxi service

Housing: The developments will provide housing benefits for the South Boston community through on-site construction and off-site funding. Specifically, these project contributions include:

- A total of over 1,000 market-rate housing units on site
- 100 units of affordable housing built on the Fan Pier site
- $15 million in linkage funds to create affordable housing in the impact area and throughout the city
- A $2 million contribution available for special affordable housing programs such as the South Boston Homeowners Stabilization Fund

Jobs: The job benefits resulting from the Fan Pier and Pier 4 developments fall into four general categories: construction jobs; permanent jobs; job training; and commitments to resident, minority and women hiring. A breakdown of these specific benefits is detailed below:

- Construction jobs -- 3,400 jobs
- Permanent jobs -- 10,250 primarily service-sector jobs
- Implementation of an outreach program to South Boston merchants
- Job linkage funds -- $3,000,000 for job training, with special consideration for South Boston residents
- Formulation of an Employment Opportunity Plan to promote hiring of South Boston residents, other city residents, minorities and women for new permanent jobs
- Developer participation in the Boston Residents Construction Plan, with special consideration for South Boston residents
- Cooperation with the Mayor's Office of Jobs and Community Services and the Fan Pier and Pier 4 Citizens Advisory Committee toward the goal of maximizing employment benefits

Taxes: As a result of the Fan Pier and Pier 4 developments, the City of Boston and the Commonwealth of Massachusetts will receive substantial increases in tax revenue. The total tax revenues expected from the developments are itemized below:

- Real Estate Taxes (City) - $18,950,000
- Hotel Taxes (State and City) - $3,800,000
- Food and Beverage Sales Taxes (State) - $1,600,000
- Retail Sales Tax (State) - $3,700,000
- State and City - $28,050,000

Public Cultural Facility: The Fan Pier development will donate to the City of Boston a sub-leasehold interest in a building site for a new cultural facility managed by the Institute of Contemporary Art. Approximately 110,000 square feet of space at this site will be used by the Institute to house exhibit space, two small theatres, a museum shop and restaurant, and workshop and classroom space. In addition, 3,000 square feet inside the building will be reserved for marine uses related to water transportation.

Conclusion: Fan Pier and Pier 4's public benefits are unprecedented in their scope and degree. A wide range of public amenities, critically needed housing, substantial new jobs, new taxes to aid city service delivery and expand the city treasury, as well as unique new cultural facilities will mean a better Boston.

FAN PIER AND PIER 4
PUBLIC BENEFITS
REPORT

Prepared for
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BOSTON REDEVELOPMENT AUTHORITY

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SUMMARY

Fan Pier/Pier 4 developments will create 4.6-million sq. ft. of mixed-use space -- residential, office, hotels, retail space and a public cultural facility -- transforming a mostly vacant, publicly inaccessible and deteriorated area into a vital part of the City of Boston. This will be accomplished through unparalleled private investment. No project in Boston's history has provided greater public benefits.

Public Amenities
- Open Space - 15 acres; 60% of land area
- Harborwalk - 1-½ miles
- Canal, Waterfront Park, Harborpark Overlook, Pedestrian Plaza
- Marina
- Water transportation - public docking facilities
- Collaborative design by outstanding architects
- Improved water quality in Boston Harbor
- Traffic study, South Boston
- Water Transit Study

Housing
- Linkage - $15-million
- Market-rate housing - 950 units
- Affordable housing - 500 units
- $2-million South Boston Neighborhood Stabilization Fund

Jobs
- 3,400 construction jobs
- 10,250 permanent jobs
- $3-million for job training
- Resident, minority and women hiring
- South Boston Job Stop

Taxes
- $18,000,000 in new real estate taxes
- $ 8,000,000 in new sales and retail taxes

Public Cultural Facility
- Developer donated building site on the Boston Harbor
- $3,000,000 in infrastructure improvements

Northern Avenue Corridor Planning
- On-going cooperation in area planning

Fan Pier/Pier 4
PUBLIC BENEFITS REPORT
March 4, 1987

In combination, the Fan Pier and Pier 4 projects will transform a mostly vacant, publicly inaccessible, and deteriorated site into a vital urban area through private investment. No developments in the history of the City have provided public benefits of greater variety and value. These public benefits fall into five broad categories: public amenities, housing, jobs, taxes and public cultural facility. This report is organized accordingly.

It is important to appreciate these public benefits in light of what other recent well-known projects have provided. By comparison to even the most outstanding projects, Fan Pier and Pier 4 stand apart in the degree to which they will benefit the public. Because of this, Fan Pier and Pier 4 are destined to become the preeminent location for Harborwalk events and the Boston waterfront experience.

By contrast to the Charlestown Navy Yard which is privately developed on public land, Fan Pier and Pier 4 which are privately developed on private land provide underground parking, and thus protect the visual and pedestrian environment from impact by automobiles; the Charlestown Navy Yard provides parking by means of surface lots and structured parking above grade. By contrast to Battery Park City in New York, Fan Pier and Pier 4 provide 60% public open space on land which is entirely privately owned;

Battery Park City provides only 35% public open space despite the fact that the land is owned by the public.

By contrast to major Boston projects currently under construction, Fan Pier and Pier 4 are producing substantial market-rate and affordable housing benefits because of its mixed-use program, only 40% of which is commercial space. Furthermore, Fan Pier and Pier 4 are among the first projects in the history of the City to be producing jobs linkage funds, by virtue of linkage payments at the new $6 per square foot instead of $5 per square foot exaction rate. Fan Pier/Pier 4 are among the first projects to include on-site affordable housing, and the first projects to propose a unique affordable housing contribution to help stabilize the neighborhood in which the projects are located.

These public benefits will be generated by unparalleled levels of private expenditure. Fan Pier and Pier 4 mark the renewed vitality of Boston's waterfront and set new development standards for the growth of the City through the remainder of this century.

Public Amenities

The Fan Pier/Pier 4 Developments will activate an underutilized waterfront site, promote the use of Boston's inner harbor for both recreation and transportation, extend the BRA's Harborpark plan, and implement other important design goals and guidelines. The public amenities include:

- 15 acres of publicly accessible open space, approximately 60% of the land area;
- 1-1/2 miles of continuous public walkway at the water's edge, more than 2,000 feet of walkways along a new canal;
- A canal, waterfront park, Harborpark overlook, fishing pier and pedestrian plaza;
- A marina with transient slips available for public use (with 10% set aside for transient use and 20-25% or more available as permanent slips are vacated during the summer season) and breakwaters for safe-harbor refuge;
- Water transportation facilities and services including a coastal cruise ship landing, ferryboat landing, public dinghy and provisioning docks all of which will be further programmed, designed, and submitted for BRA review as design development progresses. Docking facilities will provide sewer discharge for boaters.
- A collaborative architectural design by some of the most outstanding architects practicing today.

The projects will also provide substantial infrastructure improvements to the City including, among others:

- New stormwater drainage systems which will mitigate water pollution of the harbor from stormwater runoff, thereby improving Boston Harbor water quality;
- Construction of water and sewer facilities directly related to the Fan Pier and Pier 4 Developments;
- Compliance with requirements of MWRA and BWSC for 2:1 infiltration and inflow (I/I) reduction;
- The extension of the urban street system; a public park at the water's edge; and a public plaza.

A more complete description of infrastructure improvements is set forth in the Infrastructure Report of the developers submitted herewith.

The developers are committed to improving traffic conditions in the South Boston area as demonstrated by:

- Contribution to a South Boston neighborhood traffic study;
- Lobbying efforts for the new Northern Avenue bridge;
- Support for bridge repairs, reopening of Dorchester Avenue, construction of South Boston Bypass Road, and elimination of commuter and truck traffic from neighborhood streets;

- Construction of pedestrian improvements and bus/taxi waiting facilities on-site and along existing Northern Avenue;
- Encouragement and feasibility analysis of water transit as detailed in the Inner Harbor Feasibility Study prepared by the Fan Pier developer and submitted herewith;
- Submission herewith by the developers of a Transportation Access Plan which promotes high transit ridership, parking supply management, off-peak service deliveries, and mitigation planning for construction and long-term traffic.

The Developments entail the construction on-site of a mixed-use development consisting of approximately 4.6 million square feet of residential, office, hotel and retail space to be contained in 13 buildings. The Developments will also include ample below grade public parking.

Housing

The Developers of Fan Pier/Pier 4 are proposing a new and dramatic approach to address the City's critical housing shortage both with market housing and affordable units.

The combined projects are projected to produce over 1000 market units, 100 on site affordable units with primary preference to South Boston residents and assist in the creation of several hundred additional affordable units through application of project linkage payments.

A special fund of $2,000,000 is being created for the revitalization and stabilization of the South Boston housing stock which is expected to assist up to 250 South Boston families.

In summary:

- Over 1000 units of market rate housing;
- 100 units of affordable housing units included on the Fan Pier;
- $15 million in linkage funds available for creating affordable housing on-site, in the impact area, and throughout the City;
- A $2 million contribution available for special affordable housing programs such as the South Boston Homeowners Stabilization Fund.

Market Rate Housing

Fan Pier and Pier 4 will create over 1000 units of market rate housing in addition to the 100 affordable units to be built by the Fan Pier on site. A portion of the linkage from the combined projects will assist in the creation of several hundred more affordable units. This high proportion of residential development is a direct response to Mayor Flynn's goal of increasing the housing supply in Boston by several thousand units over the next few years. This housing will be created in several buildings built over time and will be marketed at a broad range of prices, making the housing available to a large portion of the City's population.

Affordable Housing

The Fan Pier Developer will generate 100 units of on-site affordable housing. Linkage payments by the Fan Pier/Pier 4 developers will potentially be made available to assist in the creation of 150 affordable units in the impacted area and additional housing city wide. In addition, the projects will generate approximately 250 loans for improvements to affordable units, through a specially-created South Boston Homeowners Stabilization Fund.

On Site Affordable Housing

The development of these Projects will result in the creation of a very substantial number of affordable housing units. One hundred (100) of these affordable housing units will be constructed by Fan Pier directly on site and, in the discretion of the Authority and the Housing Trust, portions of Fan Pier's/Pier 4 linkage funds may be made available to assist in the creation of up to 150 affordable housing units on adjoining or nearby sites. In addition, the developer will make a $20,000 contribution towards a housing study for the artists' community.

Fan Pier had initially proposed solely contribution of linkage for off-site affordable units; subsequently the Fan Pier had proposed the construction of a "shell" of affordable units for sale at its cost. After recent discussions with the Authority and other City and State officials and the Citizens Advisory Committee, Fan Pier has substantially modified its affordable housing solution.

Fan Pier agrees to create 100 affordable housing units directly on the Fan Pier site for residents of the City, with primary preference for residents of South Boston. Eighty (80%) percent of the affordable housing units to be created by Fan Pier will provide Equity Ownership Opportunity for individuals, elderly persons, and families and twenty (20%) percent of the housing units will be rental units for low income individuals, elderly persons, and families.

The 100 units of affordable housing that Fan Pier developer will build on site, in separate or combined building configurations designed by a prominent architect, shall consist of approximately 60% one bedroom units and 40% two bedroom units, a substantial number of units designed for the elderly. The developer, at the City's request, will undertake to study the feasibility of including units designed for the handicapped and units designed for large families within the on-site affordable housing component. All affordable units will meet MHFA size standards, namely approximately 750 gross square feet for one-bedroom units and 900 gross square feet for two-bedroom units.

(a) Rental Units

Twenty (20) rental units shall be reserved for low-income persons with qualifying income at 50% of the Boston SMSA median income at the time of rental.

(b) Equity Ownership Opportunity Units

1. Forty (40) affordable home ownership opportunity units will be made available for sale to individuals and families with qualifying income at 80% of the Boston SMSA median income at the time of sale;
2. Forty (40) affordable home ownership opportunity units will be made available for sale to families and individuals with qualifying income at 110% of the Boston SMSA median income at the time of sale;

(c) Long-Term Affordability

All of the 100 units to be constructed by Fan Pier will be designed to achieve the goal of long-term affordability by programs mutually agreed by the Authority, the City and State, Fan Pier and any applicable subsidizing or lending agency. This goal may also be furthered by deed restrictions on resale prices, limitations on subleasing profits, and other similar devices. These legal restrictions in combination with the foregoing programs will aim to insure that the 100 affordable units on site retain long-term affordability for the benefit of Boston residents.

In order to partially mitigate the significant cash loss of this unprecedented on-site affordable housing component of the Project, it will be necessary for Fan Pier to use a combination of a portion of its own linkage commitments and/or combinations of state and federal subsidy programs and/or certain additions to the commercial and residential space in the Project, as may be mutually agreed upon by Fan Pier and the Authority.

As indicated above 60% of the onsite affordable housing will be available to persons or families of low and moderate income and the balance will be available to persons and families of upper moderate income, all as defined by government standards. Furthermore, of the 100 affordable units being created on site, 80% of these units will be Equity Ownership Opportunity Units which will provide home ownership opportunities to persons who

would be otherwise unable to acquire ownership of equivalent housing in Boston, while 20% of the units will be long-term rentals for persons who similarly would be unable to acquire rental housing at such level within their incomes.

What Does This Mean

As an example, the program outlined above will provide 20 low-income units for rental to Boston residents whose current incomes range from $13,650 - $20,000 at current monthly rentals of $350 - $460. These ranges may be adjusted upward by inflation and other market conditions.

The remaining 80 units will be sold to Boston families whose current incomes range from $22,000 - $40,500 at current unit prices of between $61,000 - $100,000. These ranges may be adjusted upward by inflation and other market conditions.

The Fan Pier Developer has recognized the need for affordable housing in Boston and has designed a responsive program with the assistance of Mayor Flynn, the Boston Redevelopment Authority, and the Fan Pier/Pier 4 Citizens Advisory Committee.

In making this proposal, developer is assuming an ability to continue to coordinate with city, state and federal programs designed to facilitate affordable housing and is depending upon the additional gross floor area authorized for this purpose in the Development Plan.

Linkage Commitments

The two Developments will generate housing linkage payments equal to the following:

Fan Pier (2,145,800 square feet of linkage generating space)	
Total linkage payments	$10,729,500
Pier 4 (921,072 square feet of linkage generating space)	
Total linkage payments	$ 4,105,000
Total (3,066,872 square feet of linkage generating space)	
Total linkage payments	$14,834,500

The Fan Pier/Pier 4 developers would designate that its linkage payments be made available to create affordable housing as follows:

On-Site Affordable - 100 Units

- 35% of the linkage payments from Fan Pier may be applied towards creation of the 100 units of affordable housing in Building F on Fan Pier, as described above.

Impact Area Affordable - Up to 150 Units

Fan Pier/Pier 4 enthusiastically supports the City's intention to assemble a housing site or sites in the impact area

on which up to 150 units of affordable housing for populations such as first-time home buyers, elderly, and/or artists. At the discretion of the BRA and the Housing Fund, portions of the Fan Pier/Pier 4 linkage funds will be made available to assist in the creation of these 150 affordable housing units on an adjoining or nearby site in the impact area.

Impact Area - Artists - 30-40 Units

- Fan Pier/Pier 4 proposes to designate $20,000 of its linkage payments to subsidize a study by a local arts group to be designated to identify a site and prepare a feasibility analysis for the development of approximately 30-40 units of artist residential loft space in the impact area.

Affordable Housing - City wide

- The balance of the Fan Pier/Pier 4 linkage payments would be contributed to the Neighborhood Housing Trust for creating affordable housing throughout the City. Actual locations and populations served by the foregoing would be the responsibility of the City and the BRA. At an average subsidy of $30,000 per unit, this linkage would generate approximately 250 new affordable units throughout the City.

South Boston Homeowners Stabilization Fund

The Pier 4 affordable housing program was initially limited to $5 million in linkage payments. Recently, the Pier 4 proponent has pledged to contribute an additional $2 million to a unique program of neighborhood housing conservation, the first of its kind sponsored by a developer. This program would permit low and moderate income South Boston homeowners who would not otherwise be able to obtain conventional home repair loans to finance such loans on favorable terms. Such a program is expected to assist up to 250 homeowners and up to 750 families.

The South Boston Homeowners Stabilization Fund is a first for Boston, and a program which is expected to provide a precedent for other developers concerned about affordable housing in the neighborhoods in which their projects are located.

A total of $2 Million will be paid to the City as residential units on Pier 4 are produced. The City will establish and administer these funds as The South Boston Homeowners' Stabilization Fund. This new program will discourage displacement caused by new housing development on Fan Pier and Pier 4, and encourage the preservation of South Boston's existing housing stock at affordable levels. Thus this benefit addresses the needs of both resident homeowners and tenants.

Low or no-interest rate loans will be made available to resident homeowners with incomes precluding approval of conventional homeowners loans by traditional lending sources. Permissible uses of the fund will include weatherization activities, correction of code violations, repairs to mechanical systems, and deferred maintenance. Improvements may include, for example, new roofs, new boilers, storm windows, insulation and weather-stripping, handicapped access where residents are elderly, and the creation of new rental units.

The primary purpose of this program is to address the needs of resident owners who have no means of upgrading their property, and might otherwise be induced to sell their homes by the current overheated real estate market. A secondary purpose is to reduce housing costs to renters through cost savings produced by weatherization and by reducing the cost of repairs which are typically passed on to tenants by landlords.

Eligibility for loans from this fund will be limited to owners of homes in South Boston with a household income of less than 110 percent of the City median income. The current City median income is about $22,000 (the SMSA median income is $34,000). In South Boston, about 60% of households who own their own homes have incomes below $24,000. Almost 50 percent have incomes below $16,000. Approximately 40 percent have incomes

below $12,000. From these statistics, it appears that there is abundant need for such a program in South Boston.

Where applicants face extreme hardship and are unable to afford needed repairs, the principal balance of the loan may be partially or completely deferred until the property is refinanced or sold. In this case it is expected that the fund will be replenished with proceeds proportionate to the increased value realized by the refinancing or sale.

The program is expected to make emergency loans to unbankable clients for up to $3,000 for needs of an urgent nature such as furnace failure or plumbing needs. Such repairs, if left unattended, would cause undue hardship on families, and risk structural damage which could result in the abandonment of existing housing stock.

Since this program will be administered as a revolving loan pool, with repayments made to replenish the fund for future funds, it is virtually impossible to estimate the many families which are likely to benefit from the program over time. Initially the program is expected to reach as many as 250 homeowners and 750 residents. A possible allocation of the initial $2 Million funding by Pier 4, with the resulting number of households served, is as follows:

Use	Average Loan Amount	Allocation Total	Number Loan
Weatherization	$10,000	$ 600,000	60
Mechanical Systems	15,000	900,000	60
Code Correction	5,000	400,000	80
Emergency	2,000	100,000	50
Total Homeowner Loans		$2,000,000	250
Total Benefited		750	

If each loan is projected to address structures averaging three units, the initial funding of the project would be expected to serve 750 low and moderate income South Boston residents.

Jobs

The Fan Pier and Pier 4 projects together produce four types of job benefits: construction jobs; permanent jobs; job training; and commitments to resident, minority and women hiring.

Construction Jobs - 3,400 Jobs

Together, the Fan Pier and Pier 4 projects are expected to generate approximately 3,400 person years, or 7 million worker hours, of construction work. Fan Pier will generate approximately 2,300 person years of construction work, while Pier 4 will generate approximately 1,100 person years of construction work. The following is an expected breakdown of the total number of estimated worker hours by construction trade:

Trades	Man-Hours
Laborers	1,400,000
Carpenters	1,600,000
Masons	660,000
Equipment Operators	370,000
Truck Drivers	220,000
Glaziers	70,000
Rooters	30,000
Sheet Metal	180,000
Painters	180,000
Plumbers	290,000

Pipefitters	350,000
Electricians	510,000
Iron Workers	590,000
Pile Drivers	20,000
Plasterers	10,000
Elevator	160,000
Asbestos Workers (pipe insulators)	120,000
Sprinkler Fitters	200,000
Total Worker-Hours	6,960,000

Permanent Jobs - 10,250 Jobs

It is anticipated that the two Developments in combination will provide approximately 10,250 permanent jobs, and that those will be predominantly in the category of service-sector opportunities. Fan Pier will generate approximately 7,600 jobs, while Pier 4 will generate approximately 2,650 jobs (in addition to those 400 jobs which will continue to be provided by the Pier 4 Restaurant). Based on standard formula by which permanent jobs are related to the square footage of each commercial use, the breakdown for these permanent jobs is as follows:

		Fan Pier	Pier 4
Office	(1 job per 225 sf)	6,250	2,160
Retail (*)	(1 job per 400 sf)	420	140
Hotel (*)	(1 job per room)	800	290

Condominium	(as per comparables)	20	20
Parking (*)	(as per operators' estimates)	40	40
Museum (*)	(as per ICA estimate)	50	_
Marina (*)	(as per developers' estimates)	20	-
Totals		7,600	2,650
Combined Total			10,250

(*) These particular uses will generate a significant number of part-time jobs. Since the figures above are stated strictly in terms of full-time jobs, they may, in fact, significantly understate the number of people who will ultimately share in the economic benefits these projects provide.

Jobs Linkage Funds - $3,000,000

On March 20, 1986, following approval of the Fan Pier and Pier 4 Master Plans and pursuant to Section 26-3 of the Code, the proponents and the BRA entered into Development Impact Project Agreements (DIP Agreements) for Planned Development Areas 23 and 24 (Fan Pier and Pier 4 respectively). Under the terms of these DIP Agreements, the developers have assumed responsibility for Development Impact Project Exactions with regard to their projects. Fan Pier and Pier 4 were the first developments to comply with the additional linkage of $1 per commercial square foot, and thus will provide approximately $3,000,000 in linkage payments which will be earmarked for job training. The Jobs

Contribution Grant from Fan Pier will total approximately $2,142,700, while the Jobs Contribution Grant from Pier 4 will total approximately $821,000.

The developers have met with the Mayor's Office of Jobs and Community Services (OJCS) in order to discuss creative possibilities for applying these jobs linkage payments to projects of special interest to the impacted community. The developers are assured by OJCS that specific proposals for job training and outreach projects suggested by the Fan Pier/Pier 4 CAC will receive serious consideration.

OJCS will open model "Job Stop" offices this year; one of them will be in South Boston. This office will establish a clearinghouse for job training and employment opportunities, and promote job benefits for South Boston residents. The scheduled date for opening is July 1987. The Fan Pier and Pier 4 proponents have discussed the planned operation of the Job Stop office in anticipation of directing notice of job training and employment opportunities arising from the Fan Pier and Pier 4 hotels, offices, stores and restaurants, through this new City-sponsored program.

The Fan Pier developer expects that these job linkage funds will, among other things, support a pre-apprenticeship program to provide assistance to persons seeking to apply for union apprenticeship. In order to assure South Boston representation in this program, the Fan Pier developer intends to set up training

programs located in the South Boston community and advertise the program in the South Boston newspapers and through churches, schools and other community-based organizations. A person successful in achieving a union apprenticeship through this program would be given on-the-job training at the Fan Pier site.

Resident, Minority and Women Hiring Plan

On March 20, 1986, the developers and the BRA also signed Cooperation Agreements for Planned Development Areas No. 23 and 24. Thereby, the developers have agreed to submit a Boston Residents Construction Plan and an Employment Opportunity Plan prior to issuance of a building permit for the Developments' first buildings. The Boston Residents Construction Plan will ensure that the contractors for the projects will achieve at least 50 percent of the total employee workerhours in each trade by Boston residents; at least 25 percent of the total employee workerhours in each trade by minorities; and at least 10 percent of the total employee workerhours in each trade by women. With respect to full-time jobs, the Employment Opportunity Plan will ensure that the developers will use reasonable efforts to hire Boston residents for new job openings, utilizing the employment training and referral resources available through the City of Boston, and will, as landlords, urge their tenants to do the same. The developers are committed to working with the CAC and OJCS in formulating these programs.

As part of their effort to encourage resident permanent job hiring, the developers intend to make special outreach efforts to the impacted South Boston community. For example, the Hyatt Corporation intends to hold meetings in South Boston to encourage residents to consider careers at its new hotel at Fan Pier.

The Fan Pier developer will have an outreach program aimed at giving preference and help to South Boston and local businesses and stores which want to locate at Fan Pier.

Taxes

The City of Boston can expect to collect nearly thirty times the existing annual tax revenue from the Fan Pier and Pier 4 sites as a result of the Fan Pier and Pier 4 Developments. In addition, the City and Commonwealth of Massachusetts can expect a substantial increase in sales taxes including new retail sales, food and beverage sales, and hotel room taxes.

As shown below, the City of Boston can expect to collect a total of $20,550,000 in taxes from the Fan Pier/Pier 4 project annually. The City currently collects $647,731 annually from the Fan Pier and Pier 4 properties in real estate taxes. The new taxes are more than 30 times the amount of existing taxes.

Real Estate Taxes

Existing Taxes (Pier 4)		$ 350,000
New Residential Taxes (Based on $12.02 per $1,000 of Projected Sales Prices)	$2,300,000	
New Commercial Taxes (Based on $23.55 per $1,000 of Projected Project Costs)	$4,650,000	
Total New Taxes (Pier 4)		$6,950,000
Existing Taxes (Fan Pier)		$ 297,731
New Residential Taxes	$3,500,000	
New Commercial Taxes	$8,500,000	
Total Real Estate Taxes (Fan Pier)		$12,000,000

Hotel Taxes (State and City)

Fan Pier (806 rooms)	$2,800,000	
Pier 4 (290 rooms)	1,000,000	
Total		$3,800,000

(Based on 5.7% State tax rate, 4.0% City tax rate, expected occupancy and estimated average daily room rate)

Food & Beverage Sales Taxes (State)

Fan Pier	$1,300,000	
Pier 4	300,000	
Total		$1,600,000

(Based on estimated Food and Beverage sales and a 5% Food and Beverage sales tax)

Retail Sales Taxes (State)

Fan Pier	$2,500,000	
Pier 4	1,200,000	
Total		$3,700,000

(Based on anticipated annual retail sales per square foot and a 5% retail sales tax)

Total Taxes

City			
	Real Estate	$18,950,000	
	Hotel	1,600,000	
			$20,550,000
State			
	Hotel & Sales		7,500,000
Total Taxes			$28,050,000

Public Cultural Facility

Fan Pier will donate to the City a sub-leasehold interest in a building site (Parcel E) for a new cultural facility to be managed by the Institute of Contemporary Art (ICA). This spectacular site directly on Boston's inner harbor will be highly visible from the downtown. A transit stop on the proposed cultural boat loop, the new museum would join the Children's Museum, Computer Museum, Boston Tea Party Ship and Museum and the New England Aquarium on the harborfront, complementing the City's plan for a downtown cultural district. This museum, the first major cultural facility to be built in Boston in more than 70 years, would provide a unique entry to the public Harborwalk and park on Fan Pier. In addition to the site, Fan Pier will donate water, sewer and other infrastructure improvements totalling a value contributed by Fan Pier of more than $8-million.

Construction of the facility will be funded in part by the City under a program by which it will apply to the Massachusetts Convention Authority Fund. Under this program, the state will reimburse the city for up to 70% of the estimated $30-$35 million of construction cost. In addition, the developer will seek public funding with respect to the creation of this facility and adjacent related public open spaces for use in the development of the facility and the overall project. At least a portion of the remaining 30% of funds for this facility will be supplied by measures such as a municipal bond backed by income gained from

leasing the building currently housing the Institute of Contemporary Art in the Back Bay. That building is currently leased to the Institute of Contemporary Art at a nominal rent and it is anticipated that the rent at market rate would provide substantial income. In addition to these funds, the ongoing operations at the new facility will be funded from a private endowment to be raised by the ICA in a capital campaign which will begin within the next several months.

The building will be developed under the supervision of the Fan Pier developers. A by-invitation architectural design competition is planned to select the architect for the facility. While the facility has not been finally programmed (a preliminary draft is attached), it will contain approximately 110,000 square feet of space, including exhibit space for a semi-permanent exhibit geared toward educating art viewers on the evolution of modern art to the current day. The additional galleries would house several shows each year, a substantial number of which would be dedicated to Boston artists exclusively. The facility would also contain two small theaters -- one for film/video productions and a proscenium theatre for performance art and experimental and avant-garde productions. The facility would also have a museum shop and restaurant, and possibly an artist-in-residence program. In addition, it would contain workshop and classroom space. The building could be made available for use by the community for civic functions, charitable benefits and the like, with lecture

and classroom space being available to the many artists located in the Fort Point Channel area.

The museum expects also to generate many full-time and part-time jobs. Preference will be given for these jobs to South Boston artists and residents, ensuring that the museum is a community-oriented facility as well as a cultural benefit to the City and State.

An important element of the cultural facility would be approximately three thousand square feet reserved to the Fan Pier developer to be set aside for marine uses related to an adjacent docking space for water transit. This space will include waiting and ticketing areas for passengers. The museum restaurant and other facilities are intended to be available to the water transit passengers.

This offer to make the site available contemplates that the City, State and all private parties will come to an acceptable agreement on matters such as programming, planning, funding and operation of the facility and related spaces. In the event that an acceptable agreement on such matters is not reached by March 1, 1988, the offer will of necessity be withdrawn and the developer will have the right to program the site for commercial uses which will be consistent with the overall Fan Pier/Pier 4 Development.

Northern Avenue Corridor Planning

Fan Pier/Pier 4 recognizes and supports the Boston Redevelopment Authority in its recently undertaken comprehensive planning for the Northern Avenue Corridor, including studying and implementing controls for regulating area-wide parking and future development height, density and uses. This planning effort is being carried forth with the participation of area landowners and tenants, and the Fan Pier/Pier 4 Citizens Advisory Committee.

ATTACHMENTS

DEVELOPMENT IMPACT PROJECT AGREEMENT

FOR

PLANNED DEVELOPMENT AREA NO.23

AGREEMENT made as of March 20th, 1986 between the BOSTON REDEVELOPMENT AUTHORITY (hereinafter "Authority"), acting on its own behalf and as escrow agent for the Neighborhood Housing Trust, as contemplated by Article 26 of the Boston Zoning Code and hereafter to be created, and HBC ASSOCIATES (hereinafter "HBC"), a joint venture between HT-Boston, Inc., a Delaware corporation, and Carpenter Properties, Inc., a Massachusetts corporation, and its successors, assigns and legal representatives (hereinafter "Applicant"); the Authority, the Trust and the Applicant, collectively, shall be referred to herein as the parties;

WHEREAS, the Applicant proposes to construct a first-class mixed-use development consisting of office, residential, hotel and retail space, parking, recreational open space and marine-related uses including a number of buildings (hereinafter "Buildings") and other site improvements (hereinafter "Site Improvements") (the Buildings and Site Improvements will be hereinafter collectively referred to as the "Project");

WHEREAS, the Project site on which the Buildings will be located is comprised of approximately 18.53 acres of land (of which approximately 2.6 acres are now below water) bounded by Fort Point Channel, Boston Harbor, the centerline of Northern Avenue and portions of Pier 3 (hereinafter "Project Site");

WHEREAS, the Project constitutes a Development Impact Project as defined in Section 26-2(1) of Article 26 of the Boston Zoning Code; and

WHEREAS, the Neighborhood Housing Trust referred to in Article 26 of the Boston Zoning Code has not yet been created.

NOW, THEREFORE, in consideration of the mutual covenants and agreements herein contained, the parties hereto agree as follows:

ARTICLE 1. MASTER PLAN AND DEVELOPMENT IMPACT PROJECT PLAN

1.1 Master Plan and Development Impact Project Plan. The parties hereby acknowledge that the Applicant submitted to the Authority a Master Plan and Development Impact Project Plan for the Project (hereinafter "Plan"), that the Plan included a Development Impact Project Plan as required by Section 26-3 of Article 26 of the Boston Zoning Code and that after a public hearing held on February 12, 1986, notice of which was published in The Boston Herald on February 5, 1986, the Authority approved the Plan on February 12, 1986 pursuant to and in accordance with Section 26-3(1) of the Boston Zoning Code. The Applicant will, subject to Section 13 of the Cooperation Agreement for Planned Development Area No. 23 of even date herewith, proceed with planning and design for the Project Site in a manner consistent with the development concept, land uses and density contemplated in the Plan subject to any environmental reviews requested by the Authority in accordance with the Authority's "Development Review Procedures" dated 1985 and attached hereto as Exhibit A.

ARTICLE 2. LINKAGE PAYMENT

2.1 Linkage Payment. The Applicant shall be responsible, in accordance with the terms of this Agreement, for a Development Impact Project Exaction (hereinafter "Linkage Payment") as such term is defined in Section 26-2(3) of the Boston Zoning Code, in the amount as calculated and set forth in Paragraph 2.4 of this Agreement. The Applicant may, at its option, for any or all of the Buildings, satisfy its obligation for the Linkage Payment, in whole or in part, by contributing to the creation of housing units for occupancy exclusively by low and moderate income residents of the City of Boston, as described in Paragraph 2.2 of this Agreement, or by payments made in accordance with Paragraph 2.3 of this Agreement.

2.2 Housing Creation Option. If the Applicant shall elect to contribute to the creation of housing units for occupancy exclusively by low and moderate income residents of the City of Boston in order to satisfy its obligation for all or a part of the Linkage Payments for any or all of the Buildings, the Applicant shall submit a proposal in writing to the Authority on or before the appropriate Payment Date for such Building or Buildings as such Payment Date is defined in Paragraph 2.6 of this Agreement. Such proposal shall satisfy the provisions of the Housing Creation Exaction set forth in Section 26-1(3)(1) of Article 26 of the Boston Zoning Code. The proposal shall include a description of the number, location, cost and design of the housing units.

2.3 Housing Payment Option. If the Applicant shall elect to contribute money payments, said payments shall be paid to the City

of Boston acting by and through the Trust, or in the event the Trust has not been created, to the Authority. Payments shall be made in twelve (12) equal annual installments without interest accruing on those payments not yet due and payable. The first installment of such payments shall be due and payable on the Payment Date as defined in Paragraph 2.6 of this Agreement, and subsequent installments shall be due and payable on the following eleven (11) anniversary dates of the Payment Date for such Building.

2.4 Calculation of Linkage Payment. The parties acknowledge that some or all of the Buildings will include uses enumerated in Table C of Article 26 of the Boston Zoning Code as in existence on the date hereof (hereinafter "Table C Uses"), including office, retail and hotel uses and that the construction of the Buildings will require certain exceptions to the Boston Zoning Code. The amount of Linkage Payments referred to in Paragraph 2.1 of this Agreement shall equal $5.00 for each square foot of gross floor area devoted to one or more Table C Uses in excess of the first one hundred thousand (100,000) square feet of gross floor area devoted to Table C Uses. Such exception for the first one hundred thousand (100,000) square feet of gross floor area devoted to Table C Uses shall be applied to the Project only once and shall exempt only a total of one hundred thousand (100,000) square feet of gross floor area devoted to Table C Uses for the Project as a whole. The gross floor area devoted to Table C Uses shall be calculated and certified by the Applicant's architect for the Project in accordance with Section 2-1(21) of the Boston Zoning

Code. The Applicant shall submit from time to time a schedule approved by the Director of the Authority setting forth the timing and amount of Linkage Payments applicable to the Building or Buildings for which such payments are due. In calculating the amount of Linkage Payments, residential uses and parking shall not be considered "ancillary or accessory to the uses listed in Table C" within the meaning of Section 26-3(2)(a) of the Boston Zoning Code.

2.5 Recalculation. The Authority and the Trust hereby agree that any change in the rate or scheduling of the Linkage Payment as may be adopted shall not in any way increase the Linkage Payment determined in accordance with Paragraph 2.4 of this Agreement or decrease the period over which Linkage Payments are to be made.

2.6 Payment Date. The Payment Date shall be determined independently for each of the Buildings for which Linkage Payments are due (that is, Buildings containing Table C Uses). The Payment Date for each of the Buildings for which Linkage Payments are due shall be the earlier to occur of either the issuance of a final Certificate of Occupancy for the entirety of such Building or twenty-four (24) months after the granting of the building permit for the entirety of such Building.

2.7 Waiver of Linkage Payment. If a building permit is not granted for any of the Buildings or parts thereof, or if construction of any of the Buildings or parts thereof is abandoned after a building permit is obtained and prior to the commencement of substantial construction (the commencement of excavation,

foundation and other subsurface work on a specific Building or Buildings shall constitute substantial construction; provided, however, that the parties acknowledge that the Plan contemplates the construction of parking garages, infrastructure and other Site Improvements that may subsequently serve as foundations for Buildings and the parties agree that such parking garages, infrastructure and other Site Improvements shall not be considered substantial construction of such Buildings) or if a building permit for any of the Buildings or parts thereof is revoked or lapses and is not renewed, then the Applicant shall have no responsibility for the Linkage Payment with respect to such Building or part thereof.

2.8 Credit Towards Linkage Payment. If the City of Boston should hereafter impose, assess, or levy any excise or tax upon the Project, the proceeds of which are dedicated, in whole or in part, to the establishment of a fund for the purposes substantially the same as the purposes recited in Section 26-1 of Article 26 of the Boston Zoning Code, amounts payable hereunder by the Applicant shall be credited against such excise or tax; provided, however, that if such crediting shall not be legally permissible to satisfy payment of such tax or excise, the obligations of the Applicant hereunder shall, to the extent of the amount of such tax or excise, thereupon cease and be of no further force and effect.

ARTICLE 3. RESIDENT CONSTRUCTION EMPLOYMENT PLAN

3.1 Boston Residents Construction Employment Standards. The Applicant shall submit a plan, to be known as a Boston Residents

Construction Employment Plan to the Director which plan shall set forth in detail the Applicant's plans to ensure that its general contractor, and those engaged by said general contractor for construction of the Project on a craft by craft basis, meet the following Boston Residents Construction Standards: (1) at least 50 percent of the total employee workerhours in each trade shall be by bonafide Boston residents; (2) at least 25 percent of the total employee workerhours in each trade shall be by minorities; and (3) at least 10 percent of the total employee workerhours in each trade shall be by women. The Applicant shall include in the plan provisions for monitoring, compliance and sanctions. The Applicant shall submit the plan to the Director of the Authority prior to the issuance of a building permit for the first Building to be constructed.

3.2 Workerhours Defined. For purposes of this Article, workerhours shall include, without limitation, on-the-job-training and apprenticeship positions.

ARTICLE 4. EMPLOYMENT OPPORTUNITY PLAN

4.1 Employment Opportunity Plan. The Applicant shall formulate an Employment Opportunity Plan which shall provide for the Applicant's good faith efforts to achieve a goal that 50 percent of the permanent employment opportunities created by the Project shall be made available to Boston residents, including residents affected by the Project. The Applicant shall submit the plan to the Director of the Authority prior to the issuance of a building permit for the first Building to be constructed.

ARTICLE 5. LIABILITY

5.1 Scope of Applicant's Liability. The Authority agrees to

look solely to the interest from time to time in each Linkage Building that is subject to this Agreement, whether owned by HBC or its successors or assigns (including, without limitation, mortgagees), as the case may be, for any claim against HBC or its successors or assigns arising under this Agreement in connection with such individual Buildings. Furthermore, but without limiting the foregoing, liability arising under this Agreement in connection with one of the Buildings shall be limited to the interest of HBC or its successors and assigns in such individual Building. In illustration, but not in limitation of the foregoing, if separate successors to HBC Associates (including, without limitation, mortgagees) each own one of the Buildings, then the owner of one Building shall have no liability for the Development Impact Project Exaction for the other Building and vice versa. Neither HBC nor any trustee, beneficiary, partner, stockholder, manager, officer, director, agent or employee of HBC or its successors and assigns (including, without limitation, mortagees) shall ever be personally or individually liable under this Agreement, nor shall HBC or any such trustee, beneficiary, partner, stockholder, manager, officer, director, agent or employee of HBC or its successors and assigns ever be answerable or liable beyond the extent of its or their interest in the applicable Building.

ARTICLE 6. MISCELLANEOUS PROVISIONS

6.1 Amendments; Law to be Applied. If the parties hereto agree hereafter to amend this Agreement, such amendment shall be in writing and executed by the parties thereto. This Agreement

shall be governed by the laws of the Commonwealth of Massachusetts, and sets forth the entire agreement between the parties. This Agreement is binding and enforceable under contract law upon, and inures to the benefits of, the parties, their successors, assigns, and legal representatives, including, without limitation, any successor owner or owners of the improvements, and shall not be affected by any subsequent amendment or repeal of Article 26 of the Boston Zoning Code or court decision having the effect of an amendment or repeal of Article 26.

6.2 Capitalized Terms. The capitalized terms used herein without definition shall have the meanings ascribed in Article 2 or Article 26 of the Boston Zoning Code as in existence on the date hereof, unless otherwise provided.

6.3 Compliance with the Plan. The Authority hereby acknowledges approval of the Plan as voted by the Authority on February 12, 1986 as to the development concept, permitted uses and density, but not as to a specific development program, that is not as to building locations, mass, height, other characteristics of individual buildings or uses, or the allocation of space to particular uses. The Authority also acknowledges that, prior to approving the Plan and pursuant to Section 26-3(1) of the Boston Zoning Code, the Authority found that the Plan conforms to the general plan for the City as a whole and that nothing in the Plan will be injurious to the neighborhood or otherwise detrimental to the public welfare. The Applicant hereby agrees to proceed with the Project substantially in accordance with the Plan.

6.4 The Authority and the Applicant acknowledge that this Agreement shall constitute the Development Impact Project

Agreement required for the Project including for all individual Development Plan or Plans to be submitted in connection therewith. The parties acknowledge that Article 26B of the Boston Zoning Code was adopted by the Zoning Commission on February 26, 1986 and approved by the Mayor on February 27, 1986. The Applicant will pay, in addition to the Linkage Payment, a Jobs Contribution Grant of $1.00 per square foot of certain portions of the Project as calculated on the basis of Article 26B. Such Jobs Contribution Grant, if made in the form of a money payment, shall be payable in accordance with the schedule indicated in Article 26B, rather than over the 12 year payment period herein applicable to the Linkage Payment.

6.5 Notice. All notices under this Agreement must be in writing and mailed to the parties at the following addresses:

Authority:
Boston Redevelopment Authority
Director's Office
City Hall Square
Boston, MA 02201

With copies to:
Boston Redevelopment Authority
Chief General Counsel
City Hall Square
Boston, MA 02201

Applicant:
HBC Associates
470 Atlantic Avenue
Suite 810, 8th Floor
Boston, MA 02110
Attn: Mr. Lewis H. Spence

With copies to:
Hale and Dorr
60 State Street
Boston, MA 02109
Attn: John D. Hamilton, Jr., Esq.

6.6 Satisfaction of Development Impact Project Requirements. The Authority hereby acknowledges that by executing this

Agreement, the Applicant has satisfied the requirements of Section 26-3(2) of the Boston Zoning Code insofar as satisfaction of the requirements of that Section is a precondition to the granting, allowing, or adopting of a variance, conditional use permit, exception, or zoning map or text amendment with respect to the Applicant's development of the Project Site.

6.7 Titles. The captions of this Agreement, its articles and paragraphs throughout this document are intended solely to facilitate reading and referencing its provisions. Such captions shall not affect the meaning or interpretation of this Agreement.

6.8 Transfer of Interest. The Applicant shall have the right to assign, delegate, subcontract or transfer its rights and interests in all or a portion of the Project and under this Agreement provided the Applicant notify the Authority of any such assignment, delegation, subcontracting or transfer.

6.9 Knowledge of Laws. Applicant shall keep itself fully informed of all votes of the Authority, City ordinances, executive orders, and regulations, and state and federal law which in any manner affect the provisions of this Agreement. Applicant shall at all times observe and comply with said votes, ordinances, executive orders, regulations or laws, and shall protect and indemnify the City and the Authority, its officer, agents and employees against any claim or liability arising from or based upon violations of such ordinances, executive orders, regulations or laws, caused by any act or omission of the Applicant, its agents or employees.

7.0 Record Notice of Agreement. The Applicant shall record at the Suffolk County Registry of Deeds a notice of this Agreement. Failure of the Applicant to record a notice of this Agreement within thirty (30) days of the recording at said Registry of Deeds of a notice of ground lease in connection with the ground leasing of the Project Site to the Applicant shall render ineffective the provisions contained in Article 5 supra.

In witness whereof the parties hereto have caused this instrument to be executed in their behalf by their respective officers and joint venturers thereunto duly authorized as of the day and year first above set forth.

Approved as to Form:

for Karen Jennings
Chief General Counsel

BOSTON REDEVELOPMENT AUTHORITY

By: ______________________
Stephen Coyle, Director

HBC ASSOCIATES
a joint venture between
HT-Boston, Inc. and
Carpenter Properties, Inc.

By: ______________________
Lewis H. Spencer
Project Director

COOPERATION AGREEMENT
FOR
PLANNED DEVELOPMENT AREA NO. 23

AGREEMENT made as of the 20th day of March, 1986 by and between the BOSTON REDEVELOPMENT AUTHORITY (the "Authority") and HBC ASSOCIATES, a joint venture between HT-Boston, Inc., a Delaware corporation, and Carpenter Properties, Inc., a Massachusetts corporation (the "Applicant").

WITNESSETH, that in consideration of the mutual covenants and agreements herein contained, the parties agree as follows:

1. The Authority will petition the Zoning Commission of the City of Boston on behalf of the applicant to designate as a Planned Development Area ("PDA") the land in said City bounded by Fort Point Channel, Boston Harbor, the centerline of Northern Avenue and Pier 4 (the "Locus").

2. The Applicant will, subject to Section 13 of this Agreement, proceed with planning and design for the Locus in a manner consistent with the development concept, land uses and density contemplated in the Master Plan and Development Impact Project Plan for Planned Development Area No. 23 (the "Master Plan") approved by vote of the Authority on February 12, 1986 (the "Vote") after notice and public hearing at its meeting held on February 12, 1986, subject to the Environmental Reviews set forth in Paragraph 4 and the Design Review Process set forth in Paragraph 5. A certified copy of the Vote is attached hereto as Exhibit A together with a copy of the Master Plan.

3. It is anticipated that the Applicant, acting pursuant to Section 3-1A of the Boston Zoning Code (the "Code"), will submit to the Authority for the Authority's approval one or more development plans for the Locus (the "Development Plans"). The Authority acknowledges that it has completed its review only in connection with the Master Plan development concept, permitted uses and density and that Development Plans will be submitted for Authority review and approval, including approval of a specific development program, i.e., the location, masses, heights or uses of specific buildings or allocation of space to particular uses.

4. The Applicant will conduct any environmental reviews reasonably requested by the Authority ("Environmental Reviews") in accordance with the Authority's "Development Review Procedures" which is attached hereto as Exhibit B ("Development Review Procedures"). The applicant acknowledges that Environmental Reviews may include, without limitation, consideration of transportation/traffic, wind, shadows, sunlight, excavation and landfill, groundwater, solid and hazardous wastes/materials, noise, flood hazard zone/wetlands, construction impacts, historical landmarks, air quality, utility systems, energy, water quality and solar glare.

5. The Applicant shall submit a transportation access plan to the Commissioner of Transportation and the Director of the Authority. The transportation access plan will identify construction, traffic and parking impacts and specify mitigating measures that are satisfactory to the Commissioner of Transportation and the Director of the Authority.

6. The Applicant and the Authority hereby agree that the design review process required by the Development Plans to be observed by the parties ("Design Review Process") shall be as set forth in the Development Review Procedures, including reviews of the Development Concept, Schematic Review, Design Development and Contract Documents. The Applicant and the Authority hereby further agree that, as mutually agreed upon by the parties, the Design Review Process may be undertaken separately for each building, or for any group of buildings to be constructed on the Locus. Capitalized terms used and not defined herein shall have the meanings ascribed to them in the Design Review Process.

7. The Applicant has contracted with Cesar Pelli & Associates to provide design assistance and master planning for the Master Plan and related documentation.

8. Throughout the Design Review Process discussed in Section 5 above, it shall be the Applicant's responsibility to promptly notify the Authority of proposed changes to public lobbies and arcades visible from the exterior of buildings, to open spaces and landscaping and to exterior features of buildings from previously approved submissions (other than refinements of details generally consistent with such previously approved submissions), and to obtain approval from the Authority prior to incorporating them into the drawings and specifications. The Authority shall perform its functions under this provision promptly and with all reasonable dispatch, and shall use its best efforts to notify the Applicant of its approval or disapproval

(and its reasons therefor) of such changes within three (3) business days after receipt of such notice.

9. Once Contract Documents have been approved, the only further submissions to be made by the Applicant to the Authority for review and approval hereunder will be contract addenda and requests for change orders in the construction of those items subject to the Design Review Process which differ from or were not fully described in the Contract Documents. The Authority shall perform its functions under this provision promptly and with all reasonable dispatch, and shall use its best efforts to notify the Applicant of its approval or disapproval (and its reasons therefor) of such submissions within five (5) business days after receipt thereof.

10. Except as otherwise provided herein, the Authority will review and act upon the submissions required by the Design Review Process in the manner set forth in this Section 9. If the Authority finds any such submission(s) inconsistent with the previous submissions, it shall notify the Applicant of the respects in which the same is deemed to be inconsistent. If the Authority finds the submission(s) consistent, it shall so notify the Applicant and indicate the same thereon. The Authority shall perform its functions under this Agreement promptly and with all reasonable dispatch, and shall use its best efforts to notify the Applicant of its approval or disapproval (and its reasons therefor) of such submissions within ten (10) business days after

receipt thereof. The Authority may waive such of its procedures and requirements as it deems appropriate.

11. The Authority will, once Development Plans for respective portions of the Locus have been approved, informally advise the Applicant concerning, and will actively cooperate with and publicly support, the Applicant's efforts to obtain from the appropriate municipal, state and federal bodies and agencies all such permits, licenses and approvals and exceptions, variances, and other departures from the normal application of the applicable zoning and building codes and other ordinances and statutes which may be necessary or convenient in order to carry out the development of the Locus in the most expeditious and reasonable manner.

12. The Authority acknowledges that the Applicant will rely on the Authority's approval of the development concept, land uses and density contemplated in the Master Plan (the Applicant acknowledges that such approval does not constitute approval of specific Development Plans) during the preparation and submission of Development Plans, and in connection with other planning, design, financing and construction of the Project. The Authority also acknowledges that the Applicant will expend considerable time, effort and financial resources to produce Development Plans and to construct the infrastructure required in connection with the Project. Although Section 3-1A of the Code provides that no work can proceed on a project on the basis of an approved master plan unless and until a subsequent development plan for the

proposed work has been approved by the Authority and the Zoning Commission, the Authority acknowledges that if the Development Plans are consistent with the development concept, land uses and density contemplated in the Master Plan, then the Authority will, subject to the Applicant's cooperation with the Authority in its Design Review Process and Environmental Review, expeditiously process the Development Plans submitted by the Applicant and publicly support the approved Development Plans.

13. After construction has commenced on the Locus, and provided that work within the PDA has commenced and is diligently proceeding, the Authority will, within 30 days of a request by the Applicant, file with the Building Commissioner of the City of Boston a certificate pursuant to Section 6A-1 of the Code indicating that work within the PDA has commenced and is diligently proceeding.

14. If, in the future, the Applicant shall, in its reasonable judgment, determine that it has become infeasible to proceed with the whole or a portion of the approved Master Plan or any approved Development Plans, then in such case and after substantiation by the Applicant deemed adequate by the Authority of the reasons for not being able to proceed, the Authority shall cooperate with the Applicant to modify, alter, amend or revoke its previous designation or votes in order to allow the Applicant the opportunity to reasonably develop the land that it owns or leases. If the parties acting in good faith cannot agree as to an appropriate alteration, modification or amendment to the Master

Plan or any approved Development Plans, if the Applicant so requests, the Authority agrees to promptly take the necessary steps to revoke the PDA designation for all or any portion of the Locus.

15. The Authority hereby acknowledges approval of the Master Plan as voted by the Authority on February 12, 1986 as to the development concept, permitted uses and density, but not as to a specific development program, that is not as to building locations, mass, height, other characteristics of individual buildings or uses, or the allocation of space to particular uses. The Authority also acknowledges that, prior to approving the Master Plan and pursuant to Section 26-3(1) of the Boston Zoning Code, the Authority found that the Master Plan conforms to the general plan for the City as a whole and that nothing in the Master Plan will be injurious to the neighborhood or otherwise detrimental to the public welfare.

16. The Applicant shall submit a plan, to be known as a Boston Residents Construction Employment Plan to the Director of the Authority which plan shall set forth in detail the Applicant's plans to ensure that its general contractor, and those engaged by said general contractor for construction of the proposed development of the Locus, on a craft by craft basis, meet the following Boston Residents Construction Standards: (1) at least 50 percent of the total employee workerhours in each trade shall be by bonafide Boston residents; (2) at least 25 percent of the total employee workerhours in each trade shall be by minorities;

and (3) at least 10 percent of the total employee workerhours in each trade shall be by women. The Applicant shall include in the plan provisions for monitoring, compliance and sanctions. The Applicant shall submit the plan to the Director of the Authority prior to the issuance of a building permit for the first building to be constructed. For purposes of this Section 15, workerhours shall include, without limitation, on-the-job training and apprenticeship positions.

17. The Applicant shall formulate an Employment Opportunity Plan which shall provide for the Applicant's good faith efforts to achieve a goal that 50 percent of the permanent employment opportunities created by the Project shall be made available to Boston residents, including residents affected by the proposed development on the Locus. The Applicant shall submit the plan to the Director of the Authority prior to the issuance of a building permit for the first building to be constructed.

18. This Agreement shall be binding upon and enforceable against the successors and assigns of the parties hereto, it being understood and agreed that the Applicant shall have a right to transfer or assign its rights and interests in all or a portion of the Locus and under this Agreement. The Authority agrees to look solely to the interest from time to time in each building to be constructed on the Locus, whether owned by the Applicant or its successors and assigns (including, without limitation, mortgagees), as the case may be, for any claim against the Applicant or its successors and assigns arising under this

Agreement in connection with such building or buildings. Furthermore, but without limiting the foregoing, liability arising under this Agreement in connection with one of the buildings to be constructed on the Locus shall be limited to the interest of the Applicant or its successors and assigns (including, without limitation, mortgagees) in such individual building. In illustration, but not in limitation of the foregoing, if separate successors to the Applicant each own one of the buildings to be constructed on the Locus, then the owner of one such building shall have no liability under this Agreement in connection with the other such building. Neither the Applicant nor any trustee, beneficiary, partner, stockholder, manager, officer, director, agent, or employee of the Applicant or its successors and assigns shall ever be personally or individually liable under this agreement nor shall the Applicant or any such trustee, beneficiary, partner, stockholder, manager, officer, director, agent or employee of the Applicant or its successors and assigns ever be answerable or liable in any equitable proceeding or order beyond the extent of its or their interest in the applicable building or buildings.

19. The parties agree that a portion of Northern Avenue now owned by the City of Boston has been included in the PDA for purposes of convenience so that in the event the City conveys all or a portion of such land to the Applicant, or to the ground lessor of the Applicant, in connection with the proposed

relocation of Northern Avenue such land may be included in the project to be constructed on the Locus by the Applicant without need for further action by the Authority or the Zoning Commission, but no inferences are to be drawn that any approval for said relocation has been obtained by said zoning action per se.

In witness whereof the parties hereto have caused this instrument to be executed in their behalf by their respective officers and joint venturers thereunto duly authorized as of the day and year first above set forth.

Approved as to Form:

BOSTON REDEVELOPMENT AUTHORITY

By:

HBC ASSOCIATES
a joint venture between
HT-Boston, Inc. and
Carpenter Properties, Inc.

By:
Lewis H. Spence
Project Director

Public Benefits

TO: Fan Pier/Pier 4 CAC

FROM: HBC Associates/Boston Mariner Company

RE: Responses to Draft Comments on Public Benefits

DATE: January 14, 1987

Public Benefits

1. Public benefits are quantifiable, not soft, as the Committee's text suggests. Furthermore, no projects in the history of the City have provided public benefits of greater variety and value than Fan Pier and Pier 4.

Affordable Housing

1. The two projects more than meet the City's emerging housing policies. These policies, established after the projects were first proposed, are not yet approved and are still evolving. Here is how the projects meet each of these City policies:

   Housing Starts The Fan Pier and Pier 4 projects combined will provide approximately 1,100 residential units. This high proportion of residential development is a direct response to City direction aimed at increasing the housing supply by several thousand units over several years. The initial 1982 proposal for Pier 4, for instance, included no residential square footage; the current proposal includes approximately 500 units.

   Linkage The developers were the first in the City to commit to linkage payments at the increased rate of $6 a square foot, and they did so voluntarily before the increase was approved. Together, the Fan Pier and Pier 4 projects will provide a total of $15 million in housing linkage funds for the creation of low and moderate income housing, 50% of which will be earmarked for use in South Boston, and a total of $3 million in job linkage funds for job training, 50% of which will also be earmarked for South Boston. The developers will continue to explore opportunities for the creative use of their linkage funds. One of these opportunities is the creation of a 110-unit first-time home-buyers project on an adjacent site. Other opportunities will be identified and considered, including sites closer to the South Boston neighborhood as recommended by the CAC.

   Inclusionary Zoning It is the goal of the proponents to meet the City's objective of providing 10% on-site affordable units, notwithstanding that the projects will be built on land which is entirely privately-owned, and that the City's inclusionary zoning policy is not a statutory requirement but a planning objective under

consideration. The two projects will provide approximately 1,000 market-rate units (varying widely in sizes, locations within buildings, orientations, and per square-foot sales prices), and approximately 100 affordable units. The production of on-site affordable housing requires the availability of subsidy by type of use and unit configuration for the specific units. The proponents have had, and are continuing extensive discussions with public agencies. These discussions have primarily concerned the development of elderly units, since there is such a shortage of elderly units serving the South Boston Community. These agencies are in a position to make such subsidies available and the proponents believe that commitment for such funding will be forthcoming during the approvals process. If it is determined that the mix of affordable units should include any non-elderly units, the proponents will consider a revised mix, providing that the spacial and financial requirements are the same. In addition, the developers have jointly pledged voluntarily to contribute $2 million for special affordable housing programs such as the South Boston Homeowners Repair Fund. In summary, the Fan Pier/Pier 4 housing program includes market-rate units, affordable units, linkage payments, and voluntary special affordable housing contributions.

2. We agree that the long-term affordability of on-site units must be assured.

3. We recognize the demand for both elderly and artists' housing in the South Boston community. We are not opposed to the accommodation of both groups within the 100 affordable units on-site. Available operating subsidies will affect the ultimate tenants or owners of these units.

4. We support the CAC's recommendation that an area-wide Master Plan be developed by the BRA, building on the planning work which has begun through the consideration of the Fan Pier and Pier 4 projects.

5. We support the BRA's policy that a major portion of the discretionary funds from these projects be directed to the South Boston community, the impacted neighborhood. Specific housing linkage payments, jobs linkage payments, and voluntary affordable housing payments should be earmarked for South Boston.

6. We will consider establishing partnerships with locally based non-profits and using the BRA's housing creation option to fulfill our linkage obligations. We welcome the CAC's suggestions as to possible partners and sites.

Employment Opportunities

1. Fan Pier and Pier 4 are the first projects in the history of the City to provide jobs linkage funds. Under the terms of the Development Impact Project (DIP) Agreements which we signed with the City in March 1986, an estimated $3 million will be provided for job training.

2. In fulfillment of the Cooperation Agreement we signed with the City in March 1986, we expect to be among the first developers to sign a Boston-for-Boston agreement which will promote the goal of 50% of all construction and permanent jobs for Boston residents.

3. We have prepared a detailed estimate of the 7 million worker-hours or 3,400 construction jobs which Fan Pier and Pier 4 will provide. See the attached summary which is broken down by eighteen construction trades.

4. Continued strength of the regional economy depends on a healthy service sector. Many service sector jobs and careers are productive, long-term, well-paying, and personally-fulfilling. Among the 10,400 permanent jobs that will be provided by the Fan Pier/Pier 4 projects, the vast majority are office-related; the balance are related to hotel, retail, restaurant, garage, residential, and marina uses. The characterization of the Fan Pier/Pier 4 jobs as mostly part-time and short-term in the CAC draft text is inaccurate and misleading. In Massachusetts, particularly in Boston, the service sector is the fastest growing sector of the economy, offering the greatest number of new jobs at all levels of experience and ability.

Arts Facility and Marine Services

1. The Institute of Contemporary Art Cultural Center is a significant public amenity which will actively draw the public to the water's edge. No major cultural facility has been produced in Boston in over 70 years. Our present time of prosperity is the time for such new facilities to be advanced. The museum building will contain more than formal art exhibitions. Possibilities include marine exhibits and performing art theatres. The Insitute of Contemporary Art is meeting with various community interest groups and state and local agencies to better define the final program. A portion of the building will provide marine services.

New Tax Revenues

1. Together, the Fan Pier and Pier 4 projects will generate over $20 million annually in new real estate taxes for the City, and, in addition, over $5 million annually in new hotel room, meals, and retail sales taxes. This is an extraordinary benefit considering that the sites generate less than $700,000 annually in real estate taxes today. This benefit is annual, and is likely to increase dramatically over time.

HBC Associates/The Boston Mariner Company
FAN PIER/PIER 4
Breakdown of Construction Jobs by Trade

Prepared for Fan Pier/Pier 4 CAC
January 14, 1987

Construction Jobs - 7,000,000 Man-Hours or 3,400 Jobs

Together, the Fan Pier and Pier 4 projects are expected to generate approximately 3,400 person years, or 7 million man-hours, of construction work. Fan Pier will generate approximately 2,300 person years of construction work, while Pier 4 will generate approximately 1,100 person years of construction work. The following is a breakdown of the total number of estimated man-hours by contruction trade:

Trades	Man-Hours
Laborers	1,400,000
Carpenters	1,600,000
Masons	660,000
Equipment Operators	370,000
Truck Drivers	220,000
Glaziers	70,000
Roofers	30,000
Sheet Metal	180,000
Painters	180,000
Plumbers	290,000
Pipefitters	350,000
Electricians	510,000
Iron Workers	590,000
Pile Drivers	20,000
Plasterers	10,000
Elevator	160,000
Insulators	120,000
Sprinkler Fitters	200,000

Total Man-Hours	6,960,000

Executive Summary of
Fan Pier/Pier 4 Development Plans

Main Points -

- Transformation of mostly vacant, publicly inaccessible, and deteriorated land into a vital urban area through private investment of $1 billion.
- No projects in city's history have provided greater public benefits.

Projects will provide extensive public amenities -

- Fifteen acres of publicly accessible open space, 60% of land area;
- A mile and a half of public walkway at the water's edge;
- Canal, waterfront park, amphitheater, and pedestrian plaza;
- Waterfront site for a major cultural facility which will include the Institute of Contemporary Art, the first such institution built in Boston in seventy years;
- New storm water drainage system, eliminating water pollution to the harbor from storm water run-off;
- Marina with transient slips available for public use and breakwaters for safe-harbor refuge;
- Collaborative architectural design by some of the most outstanding architects practicing today;
- Water transportation facilities and services.

Projects provide economic benefits critical to Boston's strength -

- A total of 3,400 construction jobs.
- A total of 10,250 permanent jobs.
- Approximately $3,000,000 in linkage funds for job training;
- Over $20,000,000 annually in new property tax revenues.
- Approximately $5,000,000 annually in new sales tax revenues.

Projects address Boston's pressing need for affordable housing, providing -

- Approximately 1,100 new units of market and affordable housing;
- Nearly $15,000,000 in housing linkage funds (approximately half of which will be earmarked for South Boston);
- A voluntary $2,000,000 contribution for special affordable housing programs (including South Boston Homeowners Repair Fund);
- Planning assistance in the creative use of linkage monies to fund first-time home buyer units on an adjacent site.

Proponents are committed to improving traffic conditions in South Boston as demonstrated by -

- Contribution to South Boston Neighborhood Traffic Study;
- Lobbying efforts for New Northern Avenue Bridge;
- Support for bridge repairs, reopening of Dorchester Avenue, construction of South Boston By-Pass Road, and elimination of commuter and truck traffic from neighborhood streets;
- Construction of pedestrian improvements and bus/taxi waiting facilities on-site and along Old Northern Avenue;
- A tranportation access plan which ensures high transit ridership, parking supply management, off-peak service deliveries, and mitigation planning for construction-generated traffic.

Proponents are dedicated to an open public review process -

- Over 100 community meeting to date;
- Environmental Impact Report most comprehensive ever produced;
- On-going work with all interested and impacted parties.

December 15, 1986

MEMORANDUM

Fan Pier Masterplan
Job No. 8429

To: CAC and Harborpark Advisory Committee
From: Cesar Pelli & Associates
Re: Open Space

Project Site

Existing Land[1]	697,505 sf	16.0 acres
Existing Water	112,750 sf	2.6 acres
Remnant Parcel	15,925 sf	.4 acres

Developed Conditions

Built Footprint	287,700 sf	6.6 acres
Open Space w/o Water[1,2]	352,100 sf	8.1 acres
Open Space w/ Water	538,480 sf	12.4 acres

Open Space

Percentage of Proj. Site w/o Water[1,2]	352,100 /730,830=	48 %
Percentage of Proj. Site w/ Water	538,480 /826,180=	65 %

Breakdown - Open Space

Harborwalk	103,400 sf	2.37 acres	19 %
Waterfront Park	42,240 sf	.97 acres	8 %
Amphitheater	6,400 sf	.15 acres	1 %
Breakwater	5,400 sf	.12 acres	1 %
Urban Plaza(inc. 9,770 sf roadway + 12,860 sf sidewalk)	32,000 sf	.73 acres	6 %
Landscaped Park	5,600 sf	.13 acres	1 %
Canal	103,330 sf	2.37 acres	19 %
Other Open Water	95,670	2.23 acres	18 %
Other Roadways	65,750 sf	1.50 acres	12 %
Other Sidewalks	56,060 sf	1.28 acres	10 %
Other Open Spaces	22,630 sf	.52 acres	4 %
Pub. Open Sp. Tot.	538,480 sf	12.40 acres	100 %

FAR Calculations[3]

Based on Developed Conditions[1,2]	3,021,350 /730,830=	4.13
Based on Dev. Cond. & Water	3,021,350 /826,180=	3.66
Based on Developed Conditions Minus Vehicular Roadways	3,021,350 /655,310=	4.61

1. Includes 4,854 sf of existing pier structure.

2. Includes 17,400 sf of new breakwater and boardwalk pier structures.

3. 3,021,350 sf of proposed development does not include parking or the public/cultural facility.

cc: Richard Friedman, HBCA Peter Diana, Hale & Dorr
Kevin Kerr, HBCA

0042F

FAN PIER/PIER 4 DEVELOPMENT SUMMARY

Public Amenities

- Transformation of vacant, publicly inaccessible, and deteriorated land into a vital urban area and active waterfront through private investment.
- Fifteen acres of publicly accessible open space (60% of land area);
- A mile and a half of public walkway at the water's edge;
- Construction of canal, waterfront park, amphitheater, and pedestrian plaza;
- Waterfront site for a major cultural facility which will include the Institute of Contemporary Art, the first major institution of its kind built in Boston in 70 years;
- Marina with transient slips available for public use and breakwaters for safe-harbor refuge;
- Collaborative architectural design by some of the most outstanding architects practicing today;
- Water transportation facilities and services including water taxi and commuter boat facilities.

Economic Benefits

- A total of 3,400 construction jobs and 10,250 permanent jobs;
- Approximately $3,000,000 in linkage funds for job training, 50% targeted for South Boston residents;
- Over $25,000,000 annually in new property sales and hotel tax revenues for the City and State.

Affordable Housing

- Approximately 1,100 new units of market and affordable housing;
- Nearly $15,000,000 in housing linkage funds (approximately half of which will be earmarked for South Boston);
- A voluntary $2,000,000 contribution for special affordable housing programs (including South Boston Homeowners Repair Fund);
- Planning Assistance in the creative use of linkage monies to fund first-time home buyers on an adjacent site.

Traffic Improvements

- Coordination with 11 major regional and local traffic projects which will improve traffic in the region and South Boston in particular;
- Production of facilities for 10,250 permanent jobs with only 1,600 new peak hour traffic trips;

- Average daily traffic trips split equally between public transit and automobiles;
- Traffic generation well within projected new roadway capacities as publicly stated by Secretary Salvucci;
- Funding of extensive water transportation feasibility study.

Reductions of Project Size

- Most comprehensive Environmental Impact Report ever produced and extensive public input at over 100 public meetings to date;
- As a result, building heights all reduced between 10 feet and 90 feet for a total reduction of 400 feet (the equivalent of a 30 story tower);
- As a result, 10% reduction in building square footage (approximately 500,000 square feet);
- As a result, traffic is reduced by 40%;
- As a result, building mass withdrawn from water's edge.

Improvements in Utility Services

- Water quality of Boston Harbor to be improved by reduction in volume and frequency of combined sewer overflows;
- Water quality of Boston Harbor to be improved by elimination of contaminated storm water runoff;
- All utilities for the projects to be adequate for all phases of the project.
- All utilities for the projects to be provided at developers' sole cost and at no increased cost to the public;
- Existing utility services to Downtown Boston and South Boston to be improved at developers' cost.

The Boston Herald
PATRICK J. PURCELL, Publisher
KENNETH A. CHANDLER, Editor
ALAN S. EISNER, Managing Editor
PHILIP BUNTON, Sunday Editor
RACHELLE COHEN, Editorial Page Editor

Much to be gained from Fan Pier site

BEAR with us for a moment while we throw a few statistics at you about the $1 billion Fan Pier development proposed for Boston's waterfront.

During its eight years of phased-in construction the project will create 3,000 worker years of employment for the construction industry (that's 7 million "worker hours").

When completed, the 13-building project will create some 10,000 new permanent jobs in its offices, retail complexes, hotels, restaurants and marina.

Today the 25-acre parcel in question pays something under $700,000 in property taxes to the city. Upon completion the city will get some $17 million a year in property taxes. In addition, it is estimated the project will contribute $8 million in assorted sales, meals and hotel taxes to the state.

The developers also have agreed to pay $15 million in housing linkage money, $3 million in job training linkage money and $2 million to set up a revolving fund to make no-interest loans to neighborhood residents for housing repairs that could make the difference between staying in a home and selling out. The developers also will donate part of the land involved as a site for a new arts-related museum.

The project will also provide some badly needed housing – upscale housing surely, but that is hardly a crime in a city that also needs to shelter executives who keep Boston the thriving city it is

Lately, we have been hearing more fiction than fact about this project, and we have heard it from people in some quarters who would apparently prefer the mud flats and parking lots which currently make up part of the site now to the kind of architecturally — and environmentally -- sensitive development that is being proposed.

We have been told, among other things, that the development will further pollute Boston Harbor. And yet the Boston Water and Sewer Commission in its report to state Environmental Affairs Secretary James Hoyte says, "The proposed sewer, water and drain system improvements to be undertaken by the Fan Pier/Pier 4 proponents will contribute to the betterment of BWSC areawide services and will help contribute to the improvement of water quality in Boston Harbor."

Hoyte, in his decision last week requesting additional environmental impact filings on planned transportation and infrastructure improvements, was asking for items that, in fact, the developers were already working on. Transportation could be a problem, but not an insurmountable one, given the proposals already on the state's drawing board for improvements in the area.

What we need to keep in mind above all is that there is far more to be gained from the development of Fan Pier than from the status quo, and far more to be gained than its opponants would have us believe

LAWRENCE W. LARNER
Business Manager

MEPA

AUSTIN L. CANNON
Secretary-Treasurer

Building Wreckers Local #1421

Laborers' International Union of North America

P. O. BOX 770, 104 CHARLES ST., BOSTON, MASSACHUSETTS 02114 • (617) 739-4503

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January 26, 1987

Mr. James Hoyte, Secretary
The Commonwealth of Massachusetts
Executive Office of Environmental Affairs
100 Cmbridge Street
Boston, Massachusetts 02202

Re. Approval Fan Pier and Pier 4 Projects

Dear Secretary Hoyte:

I am writing in order to express the support of thousands of building tradesmen and women in Massachusetts for the Fan Pier/Pier 4 project.

I'm sure many others in the labor movement have pointed out the obvious rewards this project will bring to our members in the form of decent wages and fringe benefits, not to mention the piece of mind of future employment. These dividends, plus millions of dollars in tax revenue for the city, and the accopaning millions in linkage funds should be incentive enough to see this project completed.

Along with all of theses positive attributes this project has one overall endearing feature - Puplic access to a portion of Boston's greatest natural resource, the harbor! The private funding of this project will do nothing but enhance the beauty and upgrade the environmental quality of this unused section of the inner harbor.

I urge you not to let these acres lie fallow, but to work with us in setting the jewel in the crown of Boston's renascence.

Very truly yours,
Lawrence W. Larner

Lawrence W. Larner
Business Manger
Local 1421

Building and Construction Trades Council of the Metropolitan District

AFFILIATED TO THE

BUILDING AND CONSTRUCTION TRADES DEPARTMENT

AFL - CIO

TERRITORIAL JURISDICTION

Arlington, Boston, Belmont, Brookline, Burlington, Cambridge, Canton, Chelsea, Dedham, Everett, Malden, Medford, Melrose, Milton, Norwood, Reading, Revere, Somerville, Stoneham, Wakefield, Westwood, Winthrop, Winchester, Woburn, and the Islands of Boston Harbor

TELEPHONE
617 - 227 - 8585

8 BEACON STREET
SUITE 53
BOSTON, MA 0210

January 21, 1987

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Mr. James S. Hoyte, Secretary
The Commonwealth of Massachusetts
Executive Office of Environmental Affairs
100 Cambridge Street
Boston, MA 02202

Re: Approval of Fan Pier and Pier 4 Projects

Dear Secretary Hoyte:

The Boston Building and Construction Trades Council has examined the Final Environmental Impact Report for the Fan Pier and Pier 4 developments, and offers the following comments under the provisions of the Massachusetts Environmental Policy Act.

We strongly support the Fan Pier and Pier 4 projects. Through private investment of over $1 billion, these projects together are expected to generate approximately 7,000,000 man-hours of construction work, or 3,400 person-years of employment for members of the various construction trades.

These jobs are vital to the economic well-being of the Commonwealth. Most of the large projects currently under construction in Boston will be completed within the next two years. Without the Fan Pier and Pier 4 projects, thousands of construction workers will find themselves underutilized, or unemployed. With these projects, the opportunity for steady employment will be assured to thousands of families, especially those living in Boston's neighborhoods.

Furthermore, we believe that the Fan Pier and Pier 4 projects deserve to be approved. The developers have attended over 100 meetings with South Boston residents and special interest groups. The projects will produce tremendous benefits for Boston, particularly the South Boston neighborhood, including $15 million in linkage funds for affordable housing, $3 million for job training, $20 million annually in new sales taxes. No projects in the history of Boston have offered greater public benefits.

We urge you to certify the Fan Pier/Pier 4 Final EIR as adequate, and to do whatever possible to promote expedient approval of these projects by other State agencies.

Very truly yours,

Joseph W. Nigro, Jr.
Sec./Treas. & General Agent
Boston Building & Construction Trades

Construction and General Laborers' Union Local 22

215 HANOVER STREET, BOSTON, MASS. 02113 • 523-0314

January 21, 1987

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JAN 2 [illegible]

OFFICE OF THE SECRETARY OF ENVIRONMENTAL AFFAIRS

Mr. James S. Hoyte, Secretary
The Commonwealth of Massachusetts
Executive Office of Environmental Affairs
100 Cambridge St.
Boston, MA 02202

RE: Approval of Fan Pier and Pier 4 Projects

Dear Secretary Hoyte:

I am writing in behalf of Laborers' Local No. 22, which consists of approximately 2,000 members.

In reviewing the Final Environmental Impact Report for the Fan Pier and Pier 4 developments, I would like to offer the following comments, in support of this project:

1. The project will provide 1,400,000 man hours for laborers alone, not to mention other building trades.

2. It will provide economical benefits crucial to Boston's strength - construction jobs, permanent employment, property tax revenues, sales tax revenues.

3. The project will provide extensive public amenities, much needed in the South Boston area.

The participation of developers and representatives of South Boston who have attended over 100 meetings is deserving of approval of the project.

We, the representatives and members of Laborers' Local No. 22, strongly urge you to do whatever is possible to promote approval of these projects.

I thank you for taking the time to read this through.

Sincerely yours,

Louis A. Mandarini
Business Manager

LAM/ls

INTERNATIONAL BROTHERHOOD OF

PAINTERS and ALLIED TRADES

DISTRICT COUNCIL No. 35

303 FREEPORT STREET, DORCHESTER, MA 02122 • (617) 825-3166 - 3167

JOHN F SIMMONS
SECRETARY-TREASURER – GENERAL BUSINESS MANAGER

SIGN PAINTERS
SCENIC ARTISTS
GLAZIERS AND
GLASS WORKERS
CARPET AND LINOLEUM
PAINT MAKERS
and Allied Industrial Workers

January 30, 1987

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Mr. James S. Hoyte, Secretary
The Commonwealth of Massachusetts
Executive Office of Environmental Affairs
100 Cambridge St.
Boston, MA 02202

Re: Approval of Fan Pier and Pier 4 Projects

Dear Secretary Hoyte:

Painter's District Council #35 would like to offer the following comments in regard to the Fan Pier and Pier 4 development projects.

We believe that the developers of these projects have a strong commitment to ensuring that environmental concerns are adequately addressed. As an example, they have undertaken studies relating to roadway design, utilities, and rapid transit. In addition, they have stated that in their design of this project, over 60% of the land area will be devoted to open public space.

Of prime concern to the members of Painters District Council #35, is the fact that the Fan Pier projects will generate approximately 7 million man-hours of work for the construction trades. Many of our members living in the South Boston area have attended neighborhood meetings to register their support.

We believe that the Fan Pier and Pier 4 projects deserve to be approved, and we respectfully request that you give them favorable consideration.

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Sincerely,

John F. Simmons

John F. Simmons
Secretary-Treasurer
Painters District Council #35

Local Union No. 4
International Union of Elevator Constructors

Telephone
479-0342
479-0344

122 Quincy Shore Drive
No. Quincy, MA 02171

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January 29,1987

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Mr. James S. Hoyte, Secretary
The Commonwealth of Massachusetts
Executive Office Of Environmental Affairs
100 Cambridge Street
Boston, Massachusetts 02202

Dear Secretary Hoyte:

Local 4 of the International Union of Elevator Constructors has examined the contents of the Fan Pier 4 Development proposal and offrer these comments for your consideration.

Clearly the employment of thousands of construction tradesmen will have a positive impact on the ecomony of the area.

Neighborhood housing, job training and taxes that will be generated will be of tremendous help to the city of Boston for many years to come.

Local 4 is strongly in favor of this project and hope you will give it your full consideration and approval.

Thanking you in advance for your support.

Very truly yours,

Edward C Sullivan

Edward C. Sullivan
Business Manager
Local 4, Boston

Business Manager
WILLIAM B KEOGH
Business Agent
MICHAEL E BENULLO
Business Agent
Refrigeration Division
ROBERT D OTOOLE

Secretary-Treasurer
THOMAS P KERR

President
DANIEL A MacDONALD
Vice President
PHILIP P McMAHON
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PIPEFITTERS' ASSOCIATION

Local Union 537

10 HIGH STREET • BOSTON, MASSACHUSETTS 02110
Telephone 482 - 6102

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Mr. James S. Hoyte, Secretary
The Commonwealth Of Massachusetts
Executive Office of Enviromental Affairs
100 Cambridge Street
Boston, Massachusetts 02202

Re: Approval of Fan Pier and Pier 4 Projects.

Dear Secretary Hoyte:

The Pipefitters Local Union 537, Boston, Mass. with a membership of over 2,000 strongly support the Fan Pier and Pier 4 Project.

The construction jobs that will be generated by both of these projects will provide steady employment for members of the Boston Building Trade and Pipefitters Local Union 537 who have many members and their family, that live in South Boston, and the Dorchester area. They have attended many of the meetings that were held by the developers and and support both of these projects as they willproduce tremendous benefits for the South Boston neighborhood, and the City of Boston.

We urge you to certify the Fan Pier/Pier 4 final EIR as adequate and do whatever possible to promote the approval of these projects by other state agencies.

Very Truly yours,

William B. Keogh
William B. Keogh
Business Manager

WBK:dm

Copy to: Ellen Watts, President
Boston Mariner Company Inc.

Bricklayers and Allied Craftsmen
LOCAL NO. 3 BOSTON, MASSACHUSETTS
550 MEDFORD STREET
CHARLESTOWN, MA 02129
TELEPHONE: (617) 242-5500

MEPA

January 19, 1987

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Mr. James S. Hoyte, Secretary
The Commonwealth of Massachusetts
Executive Office of Environmental Affairs
100 Cambridge Street
Boston, Massachusetts 02202

Re: Approval of Fan Pier and Pier 4 Projects

Dear Secretary Hoyte:

Bricklayers Union Local 3 has examined the Final Environmental Impact Report for the Fan Pier and Pier 4 developments, and offers the following comments under the provisions of the Massachusetts Environment Policy Act.

We strongly support the Fan Pier and Pier 4 projects. Through private investment of over $1 billion, these projects together are expected to generate approximately 7,000,000 man-hours of construction work, or 3,400 person-years of employment for members of the various construction trades.

These jobs are vital to the economic well-being of the Commonwealth. Most of the large projects currently under construction in Boston will be completed within the next two years. Without the Fan Pier and Pier 4 projects, thousands of construction workers will find themselves underutilized, or unemployed. With these projects, the opportunity for steady employment will be assured to thousands of families, especially those living in Boston's neighborhoods.

Furthermore, we believe that the Fan Pier and Pier 4 projects deserve to be approved. The developers have attended over 100 meetings with South Boston representatives and special interest groups. The projects will produce tremendous benefits for Boston, particularly the South Boston neighborhood, including $15 million in linkage funds for affordable housing, $3 million for job training, $20 million annually in new property taxes, and $5 million annually in new sales taxes. No projects in the history of Boston have offered greater public benefits.

We urge you to certify the Fan Pier/Pier 4 Final EIR as adequate, and to do whatever possible to promote expedient approval of the projects by other State agencies.

Very truly yours,

Charles Raso

Charles Raso
Business Manager

rp

REPRESENTING: BRICKLAYERS, STONEMASONS, TILELAYERS,
MARBLE MASONS, TERRAZZO WORKERS, POINTERS, CLEANERS, CAULKERS

New England Telephone
A NYNEX Company
101 Huntington Suite 2100
Prudential Center
Boston Massachusetts 02199
Phone (617) 375-0100

John J. Coleman
Vice President-Massachusetts

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OF ENVIRONMENTAL AFFAIRS

February 2, 1987

Mr. James Hoyte, Secretary
Commonwealth of Massachusetts
Executive Office of Environmental Affairs
100 Cambridge Street
Boston, Massachusetts 02201

Dear Secretary Hoyte:

I am writing to you to endorse the Fan Pier and Pier 4 proposals set forth in the recently filed Final Environmental Impact Report. These projects will transform mostly vacant, publicly inaccessible and deteriorated land into a vital urban area through the private investment of $1 billion.

These proposals include significant public amenities such as almost a mile and a half of harborwalk and canal promenade; a waterfront park; a marina, a canal and a waterfront plaza. Sixty percent of the total land area of the two developments will be publicly accessible open space.

The economic benefits of 3400 construction jobs and 10,000 permanent jobs are substantial to both Boston and South Boston. In addition, the $3 million in linkage funds for job training and potentially $25 million in sales, property and hotel taxes will benefit both Boston and the State.

The availability of affordable on-site housing, the $15 million in housing linkage payments as well as the $2 million contribution for special affordable housing, address the need for affordable housing in the City of Boston.

Sincerely,

~~Boston Cement~~ *Masons and Asphalt Layers Union*

Operative Plasterers' and Cement Masons'
International Association of the United States and Canada
Local 534

718 HUNTINGTON AVENUE • BOSTON MASSACHUSETTS 02115
TELEPHONE 731 - 1736

Officers
JEREMIAH McGILLICUDDY, President
FRANCIS W. SHINE, Vice President
ANGELO BUONOPANE, Business Agent
JOHN F. O'NEILL, Secretary - Treasurer
DAVID McCABE, Recording Secretary

Affiliated with
MASS STATE LABOR COUNCIL AFL-CIO
MASSACHUSETTS STATE BUILDING TRADES COUNCIL
BUILDING AND CONSTRUCTION TRADES COUNCIL OF THE METROPOLITAN DISTRICT
GREATER BOSTON MASS LABOR COUNCIL
MARITIME TRADES COUNCIL

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JAN 2

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January 27, 1987

Mr. James S. Hoyte, Secretary
The Commonwealth of Massachusetts
Executive Office of Environmental Affairs
100 Cambridge Street
Boston, Massachusetts 02202

Dear Secretary Hoyte: Re: Approval of Fan Pier and Pier 4 Projects

The Boston Cement Masons and Asphalt Layers Union Local 534 has examined the Final Environmental Impact Report for the Fan Pier and Pier 4 developments and would like to present the following comments under the provisions of the Massachusetts Environmental Policy Act.

We strongly support the Fan Pier and Pier 4 projects. With private investment of over One billion dollars together these projects are expected to create approximately 7,000,000 man-hours of construction work or several years of employment for members of the various construction trades.

These jobs are vital to the economic well-being of the Commonwealth. Most of the construction projects now going on in Boston will be completed within the next two years. Without the Fan Pier and Pier 4 projects thousands of construction workers will find themselves unemployed. These two projects would offer the opportunity for steady employment to thousands of families, especially those living in Boston neighborhoods.

We believe that the Fan Pier and Pier 4 project should be approved. The developers have attended over 100 meetings with South Boston representatives and special interest groups. The benefits for Boston will be tremendous from these projects, particularly the South Boston neighborhood, including Fifteen million dollars in linkage funds for affordable housing. Three million dollars for job training, Twenty million dollars annually in new property taxes and Five million dollars annually in new sales taxes. In the history of Boston no projects have offered greater public benefits.

We urge you to certify the Fan Pier/Pier 4 Final EIR as adequate and to do whatever is possible to promote expedient approval of these projects by other State agencies.

We thank you for your consideration.

Very truly yours,
Angelo Buonopane
Angelo Buonopane
Business Agent.

AB/51

Sheet Metal Workers International Association Local Union No. 17
of Eastern Massachusetts and Rhode Island
A.F.L.-C.I.O.
1157 ADAMS STREET • DORCHESTER, MA 02124
Telephones 296-1680-81

MICHAEL WALSH
Business Manager
ROBERT D. SPINNEY
Financial Secretary-Treasurer
MICHAEL SMALL
Organizer

Business Agents
JOHN BEAN
ROBERT FANNING
ROBERT HARDIMAN
MANUEL SILVIA JR

RECEIVED
JAN [illegible] 1987
[illegible] OF
ENVIRONMENTAL AFFAIRS

January 26, 1987

Mr. James S. Hoyte, Secretary
The Commonwealth of Massachusetts
Executive Office of Environmental Affairs
100 Cambridge Street
Boston, MA 02202

Dear Secretary Hoyte:

My name is John Bean, Business Representative for Sheet Metal Workers Local Union #17 with a membership of 2,000 strong living in the Massachusetts area.

I stand with my membership in support of the Fan Pier Project and the Pier 4 Development not only as a member of organized labor but also as a proud life long resident of Boston. Twenty-five of my past 44 years in Boston have been spent in God country, South Boston, and the remaining years to date, it's equal, Dorchester. Having lived in the lower end of South Boston most of my life I am well aware of the land and deterioting buildings that have been neglected over the years. My dad used to walk myself and my four brothers down through the train terminals and warehouses on our way to Northern Avenue to go fishing for mackeral smelts off the old piers. Even at that time they were in bad shape. These were good times with memories imbedded in my mind forever, but as I became older the piers deterioted even more with fires and plain old age. I wondered what would ever happen to the area.

Well, I believe the answer is now with over one billion dollars worth of private investment ready to support this development our city can go forward. Gone forever will be the old piers, instead public walkways, canals, waterfront park, amphitheater, a pedestrian plaza along with quality office space, hotels and a residential area.

As you are well aware this project will mean approximately 3400 new construction jobs and some 10,000 permanent jobs. Linkage funds for affordable housing and job training programs along with $20,000,000 in property tax and over $5,000,000 in sales taxes annually to keep our city and state strong.

150 ERNEST STREET • PROVIDENCE, RI 02904 • Telephone 1-401-467-7075
591 SUMMER STREET • NEW BEDFORD, MA 02740 • Telephone 1-999-3050

We have the cooperation of the best and most outstanding architects and developers in the country who would like to become part of Boston's history. They are committed to solving the traffic problems with a new Northern Avenue bridge, the improvement and reopening of Dorchester Avenue, a bypass road to eliminate commuter and truck traffic and a major improvement of public transportation for this development. A new storm drainage systems is also planned to eliminate water pollution from the harbor. They are dedicated to do the best for all concerned.

Labor is looking forward to making Boston the number one city in the world. We are ready.

We ask your support to certify the Fan Pier final EIR and to promote as expediently as possible the approval of these projects.

Respectfully yours,

John Bean

John Bean
Business Representative

JB:mb

CC: M. Dukakis
R. Flynn

MASSACHUSETTS BUILDING CONGRESS, INC.
40 COURT STREET · BOSTON 02108 (617) 227-2916
"Where the Construction Industry Meets"

January 24, 1987

Mr. James S. Hoyte, Secretary
The Commonwealth of Massachusetts
Executive Office of Environmental Affairs
100 Cambridge Street
Boston, Massachusetts 02202

RECEIVED

Re. Approval of Fan Pier and Pier 4 Projects

Dear Secretary Hoyte:

The Massachusetts Building Congress is a 700 member professional organization -- representing both the design and construction industries in the Commonwealth. Attracting people who represent every facet of the building process, it has occupied a unique position in Massachusetts for 65 years.

We strongly support the Fan Pier and Pier 4 projects. Through private investment of over $1 billion, these projects together are expected to generate approximately 7,000,000 man-hours of construction work, or 3,400 person-years of employment for members of the various construction trades.

These jobs are vital to the economic well-being of the Commonwealth. Most of the large projects currently under construction in Boston will be completed within the next two years. Without the Fan Pier and Pier 4 projects, thousands of construction workers will find themselves under-utilized, or unemployed. With these projects, the opportunity for steady employment will be assured to thousands of families, especially those living in Boston's neighborhoods.

Furthermore, we believe that the Fan Pier and Pier 4 projects deserve to be approved. The developers have attended over 100 meetings with South Boston representatives and special interest groups. The projects will produce tremendous benefits for Boston, particularly the South Boston neighborhood, including $15 million in linkage funds for affordable housing, $3 million for job training, $20 million annually in new property taxes, and $4 million annually in new sales taxes. No projects in the history of Boston have offered greater public benefits.

Donald S. [illegible]
President

Joyce C. Bona
Executive Secretary

[illegible]
Secretary

[illegible]
Treasurer

Vice Presidents
RICHARD DEMPSEY • BRIAN DRISCOLL • JAMES F. STEARNS Jr. • ROBERT B. WHITE

MASSACHUSETTS BUILDING CONGRESS, INC.
40 COURT STREET · BOSTON 02108 (617) 227-2916
"Where the Construction Industry Meets"

We urge you to certify the Fan Pier/Pier 4 Final EIR as adequate, and to do whatever possible to promote expedient approval of these projects by other State agencies.

Very truly yours,

Donald S. Moscone
President

Donald S. Moscone
President

Joyce C. Botta
Executive Secretary

[illegible]
Secretary

[illegible]
Treasurer

Vice Presidents
RICHARD DEMPSEY • BRIAN DRISCOLL • JAMES F. STEARNS Jr. • ROBERT B. WHITE

Sheet Metal Workers International Association Local Union No. 17
of Eastern Massachusetts and Rhode Island
A.F.L. - C.I.O.
1157 ADAMS STREET • DORCHESTER, MA 02124
Telephones 296-1680 - 81

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Organizer

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JOHN BEAN
ROBERT FANNING
ROBERT HARDIMAN
MANUEL SILVA JR

RECEIVED
JAN 27 1987
OFFICE OF THE SECRETARY OF
ENVIRONMENTAL AFFAIRS

January 21, 1987

Mr. James Hoyte
Commonwealth of Massachusetts
Secretary of Enviromental Affairs
100 Cambridge Street
Boston, MA 02202

RE: Fan Pier and Pier 4 Project

Dear Secretary Hoyte:

Good day sir! My purpose in writing you today is in my concern over the future of the two (2) projects located down on the Waterfront; the Fan pier project and the Pier 4 development. I have just finished reading the story of the New England Life Project in this morning's Globe and after reading about such groups as "The concerned citizens for a better New England life and adhoc groups concerned with casting shadows over the Boston Common", I find labor representatives such as myself have been silent long enough, but let me address the project as stated above.

I am the business manager of the Sheet Metal Workers International Local Union #17 and presently represent over 2,000 members located here in Massachusetts and our organization has been following such projects as the Fan Pier and Pier 4 Project.

"We strongly support these projects."

The jobs that will be generated by the construction of these projects will add a great deal of economic stability to our trade as well as the other (13) thirteen trades representing the Boston Building Trades.

I am also a life long resident of Charlestown as are a great deal of our members who also live in the city of Boston. With these projects being built this will also assure a great deal of jobs in the future for their friends, neighbors and perhaps relatives. A sizeable amount of our members live within the boundaries of South Boston and speaking for their needs, they also urge passage and approval of these projects.

150 ERNEST STREET • PROVIDENCE, RI 02904 • Telephone 1-401-467-7075
591 SUMMER STREET • NEW BEDFORD, MA 02740 • Telephone 1-999-3050

Mr. Hoyte, you now have vacant and deteriorated land. What better place in the entire city of Boston can you possibly show this city off to the many visitors and tourists that visit Boston now and in the future? We have built over seven (7) new hotels over the past three (3) years. We are now, as you are aware of, the major rebuilding of the Hynes Convention Center which should be a magnet for conventions to visit Boston in the future. Wouldn't it be beautiful to show that bright beacon light, shining from this project, out over the harbor?

In closing I would like to thank you for hearing the Sheet Metal Workers concerns and we, in our organization, strongly urge you to certify the Fan Pier and Pier 4 projects in your final EIR report and perhaps quarterback these projects throughout the other state agencies for their approval as well.

Very truly yours,

Michael Walsh

Michael Walsh
Business Manager
Sheet Metal Workers
International Association
Local Union #17

MW:mb
cc: M. Dukakis
R. Flynn

AGC
MASSACHUSETTS

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JAN 27 1987
[illegible]

January 22, 1987

Mr. James S. Hoyte, Secretary
Executive Office of Environmental Affairs
100 Cambridge Street
Boston, Massachusetts 02202

Dear Secretary Hoyte:

RE: Approval of Fan Pier and Pier 4 Projects

The Associated General Contractors of Massachusetts is a trade association comprised of 266 general contractor, subcontractor and material supplier member firms which together construct approximately 75% of all the public and private buildings in Massachusetts. The Association has been in existence for 51 years in Massachusetts.

Pursuant to the Massachusetts Environmental Policy Act, AGC wishes to record its strong support for the Fan Pier and Pier 4 Projects. Since 1981, the City of Boston has been experiencing a renaissance and economic vitality fueled almost entirely by private sector investment. The lean yers of the seventies which saw the economy of the state totally dependent upon public largesse, has been replaced by a vibrant economy which has produced surpluses for the public treasury. The Fan Pier and Pier 4 Projects promise the continuation of this privately sponsored economic growth, and would guarantee prosperity for the Commonwealth and for the City of Boston into the next decade.

It is not a coincidence that Massachusetts has the lowest unemployment rate in the nation. The ability to gainfully employ all but approximately 3.8% of its citizens is directly attributable to the vibrant economy which the development in the City of Boston and in Eastern Massachusetts has created. Approval of the Fan Pier and Pier 4 Projects will assure the hundreds of thousands of construction workers and allied industry employees who supply the construction industry continued employment. More employment translates into more tax revenues as well as a better economy.

The concern for the protection of our environment has been so well established in Massachusetts that the development projects designed for Fan Pier and Pier 4 are sensitive to environmental concerns. These two projects

will provide millions of dollars in linkage funds to provide affordable housing for low and middle income people, millions of dollars in property taxes, and millions of dollars in sales taxes, while at the same time avoiding injury to the environment.

We strongly urge you to certify the Fan Pier and Pier 4 Environmental Impact Report, and to promote the expeditious approval of these projects by other state agencies.

Very truly yours,

JAMES F. GROSSO
Executive Director

jfg/lmr

LOCAL 4
INTERNATIONAL UNION OF OPERATING ENGINEERS
AFL-CIO
120 Mount Hope Street
Roslindale Mass 02131
Area Code (617) 323-9300

Charles DeRosa, Business Manager

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RECE
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OFFICE OF

January 29, 1987

Mr. James S. Hoyte, Secretary
The Commonwealth of Massachusetts
Executive Office of Environmental Affairs
100 Cambridge Street
Boston, MA 02202

Dear Secretary Hoyte:

RE: Approval of Fan Pier and Pier 4 Projects

The International Union of Operating Engineers Local 4 has examined the Final Environmental Impact Report for the Fan Pier and Pier 4 developments, and offers the following comments under the provisions of the Massachusetts Environmental Policy Act.

We strongly support the Fan Pier and Pier 4 projects. Through private investment of over $1 billion, these projects together are expected to generate approximately 7,000,000 man-hours of construction work, or 3,400 person-years of employment for members of the various construction trades.

These jobs are vital to the economic well-being of the Commonwealth. Most of the large projects currently under construction in Boston will be completed within the next two years. Without the Fan Pier and Pier 4 projects, thousands of construction workers will find themselves underutilized, or unemployed. With these projects, the opportunity for steady employment will be assured to thousands of families, especially those living in Boston's neighborhoods.

Furthermore, we believe that the Fan Pier and Pier 4 projects deserve to be approved. The developers have attended over 100 meetings with South Boston representatives and special interest groups. The projects will produce tremendous benefits for Boston, particularly the South Boston neighborhood, including $15 million in linkage funds for affordable housing, $3 million for job training, $20 million annually in new property taxes, and $5 million annually in new sales taxes. No projects in the history of Boston have offered greater public benefits.

BRANCH OFFICES: 110 Exchange Street, Portland, Maine 04111, *Telephone* 773-3730
V.R. Quaranta Post 397, 376 Turnpike Road, Shrewsbury, Massachusetts 01545, *Telephone* 754-9412

We urge you to certify the Fan Pier/Pier 4 Final EIR as adequate, and to do whatever possible to promote expedient approval of these projects by other State agencies.

Very truly yours,

Charles DeRosa

Charles DeRosa
Business Manager

med

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[illegible]

James L. Sullivan
President

January 30, 1987

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JAN 30 1987
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James S. Hoyte, Secretary
Executive Office of Environmental Affairs
Commonwealth of Massachusetts
100 Cambridge Street
Boston, MA 02202

RE: Fan Pier/Pier 4 Projects
Final Environmental Impact Report—EOEA No. 4426-4584

Dear Secretary Hoyte:

I wish to express my support for the Fan Pier/Pier 4 projects and for certification of the Final Environmental Impact Report. Since these developments were first proposed in 1982, significant improvements have been made in response to over 100 meetings with numerous and diverse groups with an interest in the Fort Point Channel area, harbor, and surrounding communities.

The proponents have submitted to, and indeed fostered, the most comprehensive and open development review process in the City's history. Recent reductions in the projects' density (below the FAR which the City of Boston approved for these sites in adopting them as Master Planned Development Areas) are further indication of the proponents' responsiveness to community input.

Approval of these projects is critical to transforming a major portion of Boston's waterfront into a vital, publicly-accessible, urban harborfront. They represent over $1 billion of private investment which will not only make an unparalleled physical contribution to presently underutilized sites, but also will play a crucial role in sustaining the strength of Boston's economy.

Both projects are expected to provide numerous public and economic benefits, among them: 3,400 construction jobs and over 10,000 permanent jobs; approximately $3 million in linkage funds for job training; over $20 million annually in new property tax revenue and approximately $5 million annually in new sales tax revenues. Equally important, numerous water-

related uses are planned to activate the area—all firsts for Boston—such as an on-demand water taxi service, a protected marina and a coastal cruise ship landing; and significant contributions are being made towards the creation of affordable housing in the City in addition to units to be provided on-site.

Relative to traffic and other environmental impacts, the proponents have a demonstrated concern. They have contributed funds to the City for the "South Boston Neighborhood Study" now underway. The proposed shuttle bus system which, although likely to be insufficient for all the development likely to occur in the Fort Point/South Boston area, is one potential transit response at the outset of development along Northern Avenue. The traffic impacts from the Fan Pier/Pier 4 projects and numerous other developments can be, and indeed must be, managed through the cooperative efforts of the City and State in conjunction with private developers and property-owners.

As regards water quality impacts, it is my understanding that the proponents have pledged to build new sanitary and storm water sewers (in tandem with new roadways), the combination of which will improve water quality in Boston harbor.

Responsible development in the Fort Point Channel area will play a critical role in the continued economic growth of Boston over the next decade and beyond. New projects in the area must support water-dependent uses and encourage further water-related activities; ensure quality and useable public access and open space; seek out improvement of water quality and general area clean-up; and encourage uses compatible with the existing residential and artist community. I support the developers' efforts in relation to the above objectives and trust they will continue to expend even further efforts towards these goals. Through continued dialogue and cooperation between the State, the City, the broad community and the projects' proponents, development of the Fan Pier/Pier 4 will transform a mostly vacant, publicly inaccessible and deteriorated urban area into a renewed and vital City asset.

Sincerely,

James L. Sullivan

JOHN N. FULHAM & SONS, INC.

253 NORTHERN AVENUE
BOSTON, MASSACHUSETTS 02210
617 542-0802

RECEIVED

January 27, 1987

James S. Hoyte, Secretary
Commonwealth of Massachusetts
Executive Office of Environmental Affairs
100 Cambridge Street
Boston, MA 02202

RE: Support for Fan Pier/Pier 4 Projects
Final Environmental Impact Report EOEA No. 4426/4584

Dear Secretary Hoyte:

We are Northern Avenue neighbors of the proposed Fan Pier and Pier 4 projects. Our business is located on the Fish Pier which is east of Pier 4 where we are engaged in the ice, fuel and ship services business serving Boston and New England. We have followed the progress of development planning for Fort Point Channel for years, and wish to express our strong support for these projects. The development of the Fan Pier and Pier 4 are necessary to anchor and make feasible the revitization of the harborfront in South Boston. Accordingly, we are writing to urge you to certify the adequacy of Final Environmental Impact Report, and to do everything possible to promote the prompt approval of these projects.

These projects represent $1 billion of private investment, an opportunity which must not be lost. With the construction of these projects, (sites which today are deteriorating and underutilized as parking lots), the area will be transformed into a vital, publicly-accessible, urban waterfront.

We are particularly supportive of those aspects of the plans which will introduce new water-dependent uses and jobs to the area. As proposed, these include a 10-acre marina protected by two substantial breakwaters, an on-demand water taxi service, and a coastal cruise ship landing -- all firsts for Boston harbor.

The developers of the Fan Pier and Pier 4 have asked our advice about these water-dependent uses. Our company has a 75-year history on this waterfront, and we currently represent a number of operators within the burgeoning coastal cruise ship industry. Our company has encouraged the developers to provide water-dependent amenities, outlined requirements for the coastal cruise ship landing, and suggested prospective candidates for marine-related employment. It is our belief that once the Fan Pier and Pier 4 are developed, water transportation will at last become feasible throughout the Inner Harbor.

Needless to say, there are many other public benefits associated with these projects. Well over half the area sites will be devoted to public open space, and the plans include a mile-and-a-half extension of Harborwalk. Together with the marina, water taxi service, excursion boat landing, and coastal cruise ship landing, these features will activate and animate the area, making it possible for the public to fully appreciate and enjoy the waterfront as never before in Boston.

The proponents have repeatedly demonstrated their concern for traffic impacts. The traffic impacts, it seems clear, can be mitigated by a combination of highway improvements, bus and water transit, and limited parking availability during the commuter rush hours, without significant disturbance to existing South Boston businesses and residents. The water quality will be protected through the construction of new sanitary and storm water sewers. The combined effect of these improvements will help to improve water quality in Boston Harbor.

As neighbors on the South Boston waterfront, we strongly support the Fan Pier and Pier 4 projects. These projects are critical to sustaining the strength of the regional economy, to securing unparalleled private investment for the transformation of an underutilized area of the waterfront, and to encouraging the creation of new water-dependent uses in Boston harbor.

Please certify that the Final EIR is adequate and support further review of these projects by other state agencies.

Respectfully submitted,

Daniel W. Fulham

DWF:tb

South Boston Profile Summary

Data for this profile have been drawn from the 1985 Household Survey, which offers the most up-to-date figures on Boston and its neighborhoods.

Race and Ethnic Origin

South Boston houses a remarkably homogeneous population of approximately 31,498, of which 97 percent lives in households (as opposed to group quarters). * Ninety-seven percent of South Boston residents in 1985 were white, in sharp contrast to the city generally (66% white).

South Boston residents were far more likely than city residents overall to have been born in the state (90% vs. 55%, respectively). One quarter of city residents were born in other states (compared to 3% in the neighborhood), reflecting the attractiveness of the city thanks to its economic, educational and cultural strengths.

Age

The median age of neighborhood residents in 1985 was 37, eight years older than the citywide average. The higher age is due to the large proportion of older adults living in South Boston: 41 percent of the population was 45 years old or more, compared to only 26 percent of the Boston population.

Marital Status and Family Composition

The proportions of never-married and married individuals in South Boston were similar in 1985 (39% vs. 41%). As the share of married individuals in South Boston increased between 1980 and 1985 it decreased in the city from 42 percent to 37 percent. The trend toward larger numbers of single people first noticed at the citywide level in 1980 is also apparent in South Boston in 1985.

Just under one-third of households in the district were composed of individuals living alone; another 11 percent were made up of two or more unrelated people sharing dwelling units. The citywide averages were 32 percent and 22 percent, respectively. Another third of South Boston households were headed by single adults with dependent children, versus only 11 percent of city households.

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* This population estimate was derived from a count of occupied dwellings in the district in 1985 and from the household size reported in the 1985 Household Survey for South Boston.

Educational Attainment

In 1985, the high school completion rate of South Boston residents was much closer to the overall city rate than it had been in 1980. By 1985 70 percent of adults 25 years or over in South Boston had completed high school, compared to 77 percent of adults throughout the city. The share of college-educated residents in the district almost doubled from 7 percent in 1980 to 13 percent in 1985, although it still lags behind the citywide average of 28 percent.

Labor Force Participation and Unemployment

Labor force participation in South Boston rose from 59 percent in 1980 to 62 percent in 1985, and unemployment dropped from 7 percent to 4 percent. Men experienced somewhat higher unemployment than women (5% versus 3%) although they participated in the work-force in larger numbers (74% versus 51%). The 1985 city unemployment rate for men was higher in 1985 than the neighborhood rate (7% and 5%, respectively, although participation rates were the same). Women participated in the labor force at a higher rate citywide than women in the district (59% versus 51%), but their unemployment exceeded the neighborhood level (5% compared to 3%).

Occupation

The occupational mix in the South Boston economy in 1985 differed markedly from the citywide averages. One-fifth of employed residents worked in professional, managerial or technical jobs, nearly one-third held clerical/secretarial jobs, 15 percent were employed as operatives and 10 percent were craftsmen. * Throughout Boston, the overall averages for these occupations were 36 percent, 20 percent, 10 percent and 8 percent, respectively. Similar shares of neighborhood and city residents worked in sales (5% and 7%, respectively), labor (4% versus 2%) and service occupations (16% versus 19%).

Industry

Shifts occurred in the industries of employment of South Boston residents between 1980 and 1985. Construction, trade, finance/insurance/real estate, and services all employed larger shares of employed residents in 1985 than previously. The proportion of the neighborhood employed in construction more than doubled in those five years (to 7%) although only 3 percent of city workers were in construction. Declines were registered in the proportions of people working in manufacturing (from 19% to 13%),

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* "Clerical" includes word processors and data entry staff.

transportation/public utilities/communications (from 9% to 7%) and in government (from 29% to 20%). Differences from the city mix of industries are noted for construction, services (24% in the district compared to 36% citywide), and government (20% in South Boston versus 11% in the city overall).

Place of Work

Roughly similar proportions of South Boston residents worked in South Boston in 1980 and 1985 (25% and 29%, respectively) but the share of workers employed downtown almost doubled in those five years from 19 percent to 34 percent. At the same time, however, the proportion of neighborhood residents working elsewhere in the city halved (from 46% in 1980 to 23% in 1985). An average of only 28 percent of city residents were employed downtown in 1985, roughly the same as five years earlier.

Income

In 1980, the median household income in South Boston was only 80 percent of the city average, giving the district the third lowest median. Over the next five years the neighborhood lost ground.

Larger shares of households living in South Boston/East Boston/Charlestown * earned under $10,000 per year than citywide (40% versus 28%) Consequently, smaller proportions of households in this combined area fell into any of the higher income brackets. The median household income in this combined area was only $13,800 in 1985, compared to $19,250 for the city as a whole. South Boston/East Boston/Charlestown ranked eighth out of the nine neighborhood groups in terms of median household income, according to the Household Survey.

Fifty-nine percent of households in South Boston/East Boston/Charlestown drew on wages and salaries as their main source of income in 1985. * The other major source of income was social security (21%). Unemployment, AFDC, welfare and other benefits accounted for 7 percent of household income in the area, as did pensions and annuities. Among households citywide, 70 percent reported wages and salaries as their main source of income. Somewhat lower proportions of households in Boston overall, therefore,

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* The sixteen neighborhoods of Boston were grouped according to geography and general similarity for the determination of incomes because the sample for this question in the 1985 Household Survey was quite small.

relied on social security (13%) or pensions (3%) for income, although 7 percent did draw government transfer payments.

Housing

The condition of the housing stock in the neighborhood is below average for the city, and the typical household in South Boston lacks the resources to substantially improve its home or to afford the higher housing costs that commercial development nearby would bring.

South Boston's housing stock is typical of most Boston neighborhoods. In 1985, three out of every four dwellings were rental units, half of all units were in two-to-four-unit buildings, 28 percent were in structures containing seven or more units, 2 percent were in five-to-six-unit buildings and 19 percent were in single-family homes. The number of persons per household remained at 2.3 from 1980 to 1985, just below the 2.4 average for the city in both years. As was the case in most neighborhoods, South Boston had a low net vacancy rate (3% versus 4% citywide) in 1985. In 1980, however, the net vacancy rate in the neighborhood and in the city was 8 percent.

The condition of South Boston's housing stock is below average for Boston. According to respondents to the 1985 Household Survey, 9 percent of all housing units in South Boston needed a great deal of exterior rehabilitation, while 45 percent needed some work. The averages for Boston were 7 and 23 percent, respectively. Similarly, 9 percent of South Boston's households rated the interior condition of their units as "poor", and 25 percent designated a "fair" interior condition. Citywide averages were 6 and 21 percent, respectively. But, as noted earlier, households in the neighborhood have relatively low resources with which to improve the condition oftheir housing.

As of 1985, South Boston households were paying relatively low rents. Gross rent, the dollar amount spent by a household for apartment rent, including utilities, was around $320 in South Boston compared to $400 citywide. Yet one-quarter of household income in South Boston went to gross rental payments, which was about the same as the city average.

DATA ON SOUTH BOSTON AND CITY OF BOSTON
FOR FAN PIERS P.D.A., 1985 AND 1980

	SOUTH BOSTON		BOSTON	
	1985	1980	1985	1980
RACE/ETHNICITY				
Population (1985 est.)	31,498	30,396	609,000	562,994
White	97 %	99 %	66 %	70 %
Black	--	--	23 %	22 %
Asian	--	--	4 %	3 %
Hispanic/other	3 %	1 %	7 %	6 %
AGE				
0 - 9 years	9 %	11 %	11 %	11 %
10 - 19 years	11 %	16 %	14 %	16 %
20 - 24 years	8 %	10 %	15 %	14 %
25 - 34 years	17 %	14 %	22 %	19 %
35 - 44 years	11 %	9 %	12 %	9 %
45 - 64 years	24 %	24 %	15 %	18 %
65 years or more	17 %	17 %	11 %	13 %
Median age	37.0	34.2	28.8	29.9
ANCESTRY/PLACE OF BIRTH				
Born in Mass.	91 %		55 %	
Born in U.S.	3 %		25 %	
Born in Europe	4 %		6 %	
Born elsewhere	2 %		15 %	
Speak English at home	92 %		80 %	
Speak Italian at home	1 %		2 %	
Speak Spanish at home	--		6 %	
Speak Chinese at home	--		2 %	
Speak another language	6 %		3 %	
FAMILY COMPOSITION				
Single	39 %	33 %	45 %	39 %
Married	41 %	36 %	37 %	42 %
Separated/Divorced	9 %	16 %	10 %	10 %
Widowed	11 %	15 %	7 %	9 %
Live alone	31 %		32 %	
Live w/ unrelated person	11 %		22 %	
Married couple	14 %		10 %	
w/ children	20 %		18 %	
Single person w/ children	23 %		11 %	
and w/ others	1 %		2 %	
Single person w/ relatives	1 %		4 %	
EDUCATION				
High school diploma	7 %	62 %	77 %	68 %
College graduate	12 %	7 %	28 %	20 %

	1985	1980	1985	1980
LABOR FORCE				
Labor force participation	62 %	59 %	66 %	62 %
Men	74 %		73 %	
Women	51 %		59 %	
Unemployment rate	4 %	7 %	6 %	6 %
Men	5 %		7 %	
Women	3 %		5 %	
OCCUPATION				
Professional, technical, managerial	20 %		36 %	30 %
Sales	5 %		7 %	3 %
Clerical, secretarial	30 %		20 %	26 %
Crafts, mechanical	10 %		8 %	8 %
Operatives	15 %		10 %	11 %
Laborers	4 %		2 %	3 %
Service Workers	16 %		18 %	20 %
Total	100%		100%	100%
INDUSTRY				
Construction	7 %	3 %	3 %	2 %
Manufacturing	13 %	18 %	14 %	14 %
Transportation, communications, public utilities	7 %	9 %	5 %	6 %
Trade	16 %	12 %	16 %	16 %
Finance, insurance, real estate	9 %	5 %	8 %	7 %
Services	24 %	20 %	36 %	31 %
Government	20 %	29 %	11 %	20 %
Self-employment	5 %	4 %	7 %	5 %
Total	100%		100%	
PLACE OF WORK				
Home neighborhood	29 %	25 %	17 %	19 %
Downtown	34 %	19 %	28 %	20 %
Elsewhere in Boston	23 %	46 %	25 %	34 %
Within SMSA	10 %	10 %	28 %	24 %
Outside SMSA	4 %	•	2 %	3 %
Total	100%	100 %	100%	100%
MEANS OF TRANSPORTATION				
Private vehicle	44 %	35 %	50 %	47 %
MBTA	33 %	44 %	33 %	35 %
Walked only	20 %	21 %	14 %	15 %
Other	3 %	•	3 %	3 %
Total	100%	100%	100%	100 %

	1985	1980	1985	1980
INCOME •				
Median household income	$13,800		$19,250	
Largest sources of income				
Wages, salaries	59 %		70 %	
Social security	21 %		13 %	
Unemployment, AFDC, welfare	7 %		7 %	
HOUSING				
Occupied units				
Median contract rent	$220		$350	
Median gross rent	$320		$400	
Mean housing value	$112,943	$39,324	$111,760	$50,131
Percent appreciation	187.2 %		122.9 %	
Gross vacancy rate	7.5 %		6.1 %	
Persons per household	2.32		2.44	
	1984/85	1974	1984/85	1974
Housing condition				
Good	90 %	60 %	92 %	70 %
Fair	8 %	31 %	5 %	20 %
Poor	1 %	10 %	3 %	9 %

- Mean housing values reported in 1985 constant dollars.
- Income data for South Boston include East Boston and Charlestown.

SOURCES: B.R.A. and N.D.E.A. Household Survey, conducted by the
Center for Survey Research, 1985.
U.S. Bureau of the Census, 1980 Census of Population.
Summary Analysis of the NDEA Housing Condition Survey,
with Comparisons with the 1974 B.R.A./Building Inspection
Department Survey, November 1985.

AH-PD & R/B.R.A.
19february1987

08/21/86

BUSINESS PATTERNS IN SOUTH BOSTON, NUMBER OF ESTABLISHMENTS AND EMPLOYEES, BY TYPE OF BUSINESS, 1983

INDUSTRY CODE	TYPE OF BUSINESS	NUMBER OF ESTABLISHMENTS	NUMBER OF EMPLOYEES
**	AGRICULTURE AND MINING		
0	Agriculture and Mining	8	55
** Subtotal **		8	55
**	CONSTRUCTION		
15	General Constractors	20	183
16	Heavy Construction	1	374
17	Special Trade Contractors	52	808
** Subtotal **		73	1365
**	MANUFACTURING		
20	Food and Kindred Products	17	1138
22	Textile Mill Products	8	327
23	Apparel and Other Textile	25	1622
24	Lumber and Wood	5	239
25	Furniture and Fixtures	3	11
26	Paper and Allied Products	8	175
27	Printing and Publishing	68	2302
28	Chemicals	4	229
29	Petroleum and Coal Products	1	2
30	Rubber and Plastic	3	23
31	Leather	3	115
32	Stone, Clay and Glass	1	2
33	Primary Metals	4	78
34	Fabricated Metals	13	529
35	Machinery Ex. Electronic	9	167
36	Electric and Electronic Equipment	8	1047
37	Transportation Equipment	2	21
38	Instruments	3	55
39	Miscellaneous Manufacturing	4	93
** Subtotal **		189	8175
**	TRANSPORTATION AND PUB. UTIL.		
41	Local Transit	5	44
42	Trucking and Warehousing	37	1229
44	Water Transportation	6	133
45	Transportation by Air	1	2
47	Transportaion Services	9	125
48	Communications	3	422
49	Electric, Gas, & Sanitary Service	1	2
** Subtotal **		62	1957
**	WHOLESALE AND RETAIL		
50	Wholesale Trade - Durable	88	1183
51	Wholesale Trade - Nondurable	120	2239

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Page No.     2
08/21/86
          BUSINESS PATTERNS IN SOUTH BOSTON, NUMBER OF
      ESTABLISHMENTS AND EMPLOYEES, BY TYPE OF BUSINESS, 1983

    INDUSTRY  TYPE                                      NUMBER      NUMBER
        CODE  OF                                            OF          OF
              BUSINESS                          ESTABLISHMENTS   EMPLOYEES

           52 Building Materials & Garden                    6          40
           53 General Merchandise Stores                     6          71
           54 Food Stores                                   35         651
           55 Automotive Dealers & Service                  11          46
           56 Apparel & Accessory Stores                    11         183
           57 Furniture & Home Furnishings                   5          24
           58 Eating and Drinking Places                    90        1953
           59 Miscellaneous Retail                          48         521
** Subtotal **
                                                           420        6961

**  FINANCE, INS., REAL ESTATE
           60 Banking                                        9         279
           61 Credit Agencies                                7          70
           62 Security, Commodity Brokers                    4         773
           63 Insurance Carriers                             7         373
           64 Insurance Agents, Brokers                     14         526
           65 Real Estate                                   33         448
           66 Combined Real Estate-Insurance                 1           2
           67 Holding & Other Investment                     9         103
** Subtotal **
                                                            84        2574

**  SERVICES
           72 Personal Services                             27         284
           73 Business Services                             50         997
           75 Auto Repair                                   30         443
           76 Miscellaneous Repair                           7          54
           78 Motion Pictures                                3           7
           79 Amusement & Recreation                        10         297
           80 Health Services                               22         806
           81 Legal Services                                 7          88
           82 Educational Services                           6          94
           83 Social Services                               15         231
           84 Museums                                        1           2
           86 Membership Organizations                      25         350
           89 Miscellaneous Services                        28         625
** Subtotal **
                                                           231        4278

**  UNCLASSIFIABLE ESTABLISHMENTS
           99 Unclassifiable                                54         276
** Subtotal **
                                                            54         276
*** Total ***
                                                          1121       25641
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DEVELOPMENT IMPACT PROJECT AGREEMENT

for

PLANNED DEVELOPMENT AREA NO. 24

PIER 4, SOUTH BOSTON

AGREEMENT made as of March 20, 1986 between the BOSTON REDEVELOPMENT AUTHORITY (hereinafter "Authority"), acting on its own behalf and as escrow agent for the Neighborhood Housing Trust, (hereinafter "Trust") as contemplated by Article 26 of the Boston Zoning Code and hereafter to be created, and THE BOSTON MARINER COMPANY (hereinafter "MARINER"), a Massachusetts real estate development and investment corporation and its successors, assigns and legal representatives (hereinafter "Applicant"); the Authority, the Trust and the Applicant, collectively, shall be referred to herein as the parties;

WHEREAS, the Applicant proposes to construct a first-class mixed-use development consisting of office, residential, hotel and retail space, parking, recreational open space and marine-related uses including a number of buildings (hereinafter "Buildings") and other site improvements (hereinafter "Site Improvements") (the Buildings and Site Improvements will be hereinafter collectively referred to as the "Project");

WHEREAS, the Project site on which the Buildings will be located is comprised of approximately 16.4 acres of land (of which approximately 7.5 acres are now below water) generally bounded by the Fan Pier (Piers 1, 2, and part of 3), Boston Harbor, Commonwealth Pier 5, and Northern Avenue (hereinafter "Project Site");

WHEREAS, the Project constitutes a Development Impact Project as defined in Section 26-2(1) of Article 26 of the Boston Zoning Code; and

WHEREAS, the Neighborhood Housing Trust referred to in Article 26 of the Boston Zoning Code has not yet been created.

NOW, THEREFORE, in consideration of the mutual covenants and agreements herein contained, the parties hereto agree as follows:

ARTICLE 1. MASTER PLAN AND DEVELOPMENT IMPACT PROJECT PLAN

1.1 Master Plan and Development Impact Project Plan. The parties hereby acknowledge that the Applicant submitted to the Authority a Master Plan and Development Impact Project Plan for the Project (hereinafter "Plan"), that the Plan included a Development Impact Project Plan as required by Section 26-3 of Article 26 of the Boston Zoning Code and that after a public hearing held on _____________ ___, 1986, notice of which was published in ______________ on _____________ ___, 1986, the Authority approved the Plan on _____________ ___, 1986, pursuant to and in accordance with Section 26-3(1) of the Boston Zoning Code. The Applicant will, subject to Section 13 of the Cooperation Agreement for Planned Development Area No. 23 of even date herewith, proceed with planning and design for the Project Site in a manner consistent with the development concept, land uses and density contemplated in the Plan subject to any enviromental reviews requested by the Authority in accordance with the Authority's "Development Review Procedures" dated 1985 and attached hereto as Exhibit A.

ARTICLE 2. LINKAGE PAYMENT

2.1 Linkage Payment. The Applicant shall be responsible, in accordance with the terms of this Agreement, for a Development Impact

Project Exaction (hereinafter "Linkage Payment") as such term is defined in Section 26-2(3) of the Boston Zoning Code, in the amount as calculated and set forth in Paragraph 2.4 of this Agreement. The Applicant may, at its option, for any or all of the Buildings, satisfy its obligation for the Linkage Payment, in whole or in part, by contributing to the creation of housing units for occupancy exclusively by low and moderate income residents of the City of Boston, as described in Paragraph 2.2 of this Agreement, or by payments made in accordance with Paragraph 2.3 of this Agreement.

2.2 Housing Creation Option. If the Applicant shall elect to contribute to the creation of housing units for occupancy exclusively by low and moderate income residents of the City of Boston in order to satisfy its obligation for all or part of the Linkage Payments for any or all of the Buildings, the Applicant shall submit a proposal in writing to the Authority on or before the appropriate Payment Date for such Building or Buildings as such Payment Date is defined in Paragraph 2.6 of this Agreement. Such proposal shall satisfy the provisions of the Housing Creation Exaction set forth in Section 26-1(3) (1) of Article 26 of the Boston Zoning Code. The proposal shall include a description of the number, location, cost and design of the housing units.

2.3 Housing Payment Option. If the Applicant shall elect to contribute money payments, said payments shall be paid to the City of Boston acting by and through the Trust, or in the event the Trust has not been created, to the Authority. Payments shall be made in twelve (12) equal annual installments without interest accruing on those payments not yet due and payable. The first installment of such payments shall be due and payable on the Payment Date as defined in Paragraph 2.6 of this Agreement, and subsequent installments shall be due and payable on the

following eleven (11) anniversary dates of the Payment Date for such Building.

2.4 Calculation of Linkage Payment. The parties acknowledge that some or all of the Buildings will include uses enumerated in Table C of Article 26 of the Boston Zoning Code as in existence on the date hereof (hereinafter "Table C Uses"), including office, retail and hotel uses and that the construction of the Buildings will require certain exceptions to the Boston Zoning Code. The amount of Linkage Payments referred to in Paragraph 2.1 of this Agreement shall equal $5.00 for each square foot of gross floor area devoted to one or more Table C Uses in excess of the first one hundred thousand (100,000) square feet of gross floor area devoted to Table C Uses such exception for the first one hundred thousand (100,000) square feet of gross floor area devoted to Table C Uses shall be applied to the Project only once and shall exempt only a total of one hundred thousand (100,000) square feet of gross floor area devoted to Table C Uses for the Project as a whole. The gross floor area devoted to Table C Uses shall be calculated and certified by the applicant's architect for the Project in accordance with Section 2-1 (21) of the Boston Zoning Code. The Applicant shall submit from time to time a schedule approved by the Director of the Authority setting for the timing and amount of Linkage Payments applicable to the Building or Buildings for which such payments are due. In calculating the amount of Linkage Payments, residential uses and parking shall not be considered "ancillary or accessory to the uses listed in Table C" within the meaning of Section 26.3(2) (a) of the Boston Zoning Code.

2.5 Recalculation. The Authority and the Trust hereby agree that any change in the rate or scheduling of the Linkage Payment as may be adopted

shall not in any way increase the Linkage Payment determined in accordance with Paragraph 2.4 of this Agreement or decrease the period over which Linkage Payments are to be made.

2.6 Payment Date. The Payment Date shall be determined independently for each of the Buildings for which Linkage Payments are due (that is, Buildings containing Table C Uses). The Payment Date for each of the Buildings for which Linkage Payments are due shall be the earlier to occur or either the issuance of a final Certificate of Occupancy for the entirety of such Building or twenty-four (24) months after the granting of the building permit for the entirety of such Building.

2.7 Waiver of Linkage Payment. If a building permit is not granted for any of the Buildings or parts thereof, or if construction of any of the Buildings or parts thereof is abandoned after a building permit is obtained and prior to the commencement of substantial construction (the commencement of excavation, foundation and other subsurface work on a specific Building or Buildings shall constitute substantial construction; provided, however that the parties acknowledge the Plan contemplates the construction of parking garages, infrastructure and other Site Improvements that may subsequently serve as foundations for Buildings and the parties agree that such parking garages, infrastructure and other Site Improvements shall not be considered substantial construction of such buildings) or if a building permit for any of the Buildings or parts thereof is revoked or lapses and is not renewed, then the Applicant shall have no responsibility for the Linkage Payment with respect to such Building or part thereof.

2.8 Credit Towards Linkage Payment. If the City of Boston should hereafter impose, assess, or levy any excise or tax upon the Project, the proceeds of which are dedicated, in whole or in part, to the establishment of a fund for the purposes substantially the same as the purposes recited in Section 26-1 of Article 26 of the Boston Zoning Code, amounts payable hereunder by the Applicant shall be credited against such excise or tax; provided, however, that if such crediting shall not be legally permissible to satisfy payment of such tax or excise, the obligations of the Applicant hereunder shall, to the extent of the amount of such tax or excise, thereupon cease and be of no further force and effect.

ARTICLE 3. RESIDENT CONSTRUCTION EMPLOYMENT PLAN

3.1 Boston Residents Construction Employment Standards. The Applicant shall submit a plan, to be known as a Boston Residents Construction Employment Plan to the Director which plan shall set forth in detail the Applicant's plans to ensure that its general contractor, and those engaged by said general contractor for construction of the Project on a craft by craft basis, meet the following Boston Residents Construction Standards: (1) at least 50 percent of the total employee workerhours in each trade shall be by bonafide Boston residents; (2) at least 25 percent of the total employee workerhours in each trade shall be by minorities; and (3) at least 10 percent of the total employee workerhours in each trade shall be by women. The Applicant shall include in the plan provisions for monitoring, compliance and sanctions. The Applicant shall include in the plan provisions for monitoring, compliance

and sanctions. The Applicant shall submit the plan to the Director of the Authority prior to the issuance of a building permit for the first Building to be constructed.

3.2 Workerhours Defined. For purposes of this Article, workerhours shall include, without limitation, on-the-job-training and apprenticeship positions.

ARTICLE 4. EMPLOYMENT OPPORTUNITY PLAN

4.1 Employment Opportunity Plan. The Applicant shall formulate an Employment Opportunity Plan which shall provide for the Applicant's good faith efforts to achieve a goal that 50 percent of the permanent employment opportunities created by the Project shall be made available to Boston residents including residents affected by the Project. The Applicant shall submit the plan to the Director of the Authority prior to the issuance of a building permit for the first Building to be constructed.

ARTICLE 5. LIABILITY

5.1 Scope of Applicant's Liability. The Authority agrees to look solely to the interest from time to time in each Building that is subject to this Agreement, whether owned by Mariner or its successors or assigns (including, without limitation, mortgagees), as the case may be, for any claim against Mariner or its successors or assigns arising under this Agreement in connection with such individual Buildings. Furthermore, but without limiting the foregoing, liability arising under this Agreement in

connection with one of the Buildings shall be limited to the interest of Mariner or its successors and assigns in such individual Building. In illustration, but not in limitation of the foregoing, if separate successors to Mariner (including, without limitation, mortgagees), each own one of the Buildings, then the owner of one Building shall have no liability for the Development Impact Project Exaction for the other Building and vice versa. Neither Mariner nor any trustee, beneficiary, partner, stockholder, manager, officer, director, agent or employee of Mariner or its successors and assigns (including, without limitation, mortgagees), without limitation, shall ever be personally or individually liable under this Agreement, nor shall Mariner or any such trustee, beneficiary, partner, stockholder, manager, officer, director, agent or employee of Mariner or its successors and assigns ever be answerable or liable beyond the extent of its or their interest in the applicable Building.

ARTICLE 6. MISCELLANEOUS PROVISIONS

6.1 Amendments; Law to be Applied. If the parties hereto agree hereafter to amend this Agreement, such amendment shall be in writing and executed by the parties thereto. This Agreement shall be governed by the laws of the Commonwealth of Massachusetts, and sets forth the entire agreement between the parties. This Agreement is binding and enforceable under contract law upon, and inures to the benefits of, the parties, their successors, assigns, and legal representatives, including, without limitation, any successor owner or owners of the improvements, and shall

not be affected by any subsequent amendment or repeal of Article 26 of the Boston Zoning Code or court decision having the effect of an amendment or repeal of Article 26.

6.2 Capitalized Terms. The capitalized terms used herein without definition shall have the meanings ascribed in Article 2 or Article 26 of the Boston Zoning Code as in existence on the date hereof, unless otherwise provided.

6.3 Compliance with the Plan. The Authority hereby acknowledges approval of the Plan as voted by the Authority on ______________, 1986 as to the development concept, permitted uses and density, but not as to a specific development program, that is not as to building locations, mass, height, other characteristics of individual buildings or uses, or the allocation of space to particular uses. The Authority also acknowledges that, prior to approving the Plan and pursuant to Section 26-3 (1) of the Boston Zoning Code, the Authority found that the Plan conforms to the general plan for the City as a whole and that nothing in the Plan will be injurious to the neighborhood or otherwise detrimental to the public welfare. The Applicant hereby agrees to proceed with the Project substantially in accordance with the Plan.

6.4 The Authority and the Applicant acknowledge that this Agreement shall constitute the Development Impact Project Agreement required for the Project including for all individual Development Plan or Plans to be submitted in connection therewith. The parties acknowledge, that Article 26B of the Boston Zoning Code, was adopted by the Zoning Commission on February 26, 1986 and approved by the Mayor on February 27, 1986. The Applicant will pay, in addition to the Linkage Payment, a Jobs

Contribution Grant of $1.00 per square foot of certain portions of the Project as calculated on the basis of Article 26B. Such Jobs Contribution Grant, if made in the form of a money payment, shall be payable in accordance with the schedule indicated in Article 26B, rather than over the 12 year payment period herein applicable to the Linkage Payment.

6.5 Notice. All notices under this Agreement must be in writing and mailed to the parties at the following addresses:

Authority:
Boston Redevelopment Authority
Director's Office
City Hall Square
Boston, MA 02201

With copies to:
Boston Redevelopment Authority
Chief General Counsel
City Hall Square
Boston, MA 02201

Applicant:
The Boston Mariner Company
85 East India Row
Suite 41E
Boston, MA 02110
Attn: Ms. Ellen A. Watts

With copies to:
Ropes & Gray
225 Franklin Street
Boston, MA 02110
Attn: John A. Pike, Esq.

6.6 Satisfaction of Development Impact Project Requirements. The Authority hereby acknowledges that by executing this Agreement, the Applicant has satisfied the requirements of Section 26-3(2) of the Boston Zoning Code insofar as satisfaction of the requirements of that Section is a precondition to the granting, allowing, or adopting of a variance, conditional use permit, exception, or zoning map or text amendment with respect to the Applicant's development of the Project Site.

6.7 Titles. The captions of this Agreement, its articles and paragraphs throughout this document are intended solely to facilitate reading and referencing its provisions. Such captions shall not affect the meaning or interpretation of this Agreement.

6.8 Transfer of Interest. The Applicant shall have the right to assign, delegate, subcontract or transfer its rights and interests in all or a portion of the Project and under this Agreement provided the Applicant notify the Authority of any such assignment, delegation, subcontracting or transfer.

6.9 Knowledge of Laws. Applicant shall keep itself fully informed of all votes of the Authority, City ordinances, executive orders, and regulations, and state and federal law which in any manner affect the provisions of this Agreement. Applicant shall at all times observe and comply with said votes, ordinances, executive orders, regulations or laws, and shall protect and indemnify the City and the Authority, its officer, agents and employees against any claim or liability arising from or based upon violations of such ordinances, executive orders, regulations or laws, caused by any act of omission of the Applicant, its agents or employees.

In witness whereof the parties hereto have caused this instrument to be executed in their behalf by their respective officers thereunto duly authorized as of the day and year first above set forth.

Approved as to Form:

Chief General Counsel

BOSTON REDEVELOPMENT AUTHORITY

By:
Stephen Coyle, Director

THE BOSTON MARINER COMPANY

By:
President

COOPERATION AGREEMENT

for

PLANNED DEVELOPMENT AREA NO. 24

AGREEMENT made as of the 20 day of March, 1986 by and between the BOSTON REDEVELOPMENT AUTHORITY (the "Authority"), and THE BOSTON MARINER COMPANY, INC., a Massachusetts real estate development and investment corporation owned by the Athanas family (the "Applicant").

WITNESSETH, that in consideration of the mutual covenants and agreements herein contained, the parties agree as follows:

1. The Authority will petition the Zoning Commission of the City of Boston on behalf of the Applicant to designate as a Planned Development Area ("PDA") the land in said City bounded by the Fan Pier (Piers 1, 2, and part of 3), Boston Harbor, Commonwealth Pier 5, and Northern Avenue (the "Locus").

2. The Applicant will, subject to Section 13 of this Agreement, proceed with planning and design for the Locus in a manner consistent with the development concept, land uses and density contemplated in the Master Plan and Development Impact Project Plan for Planned Development Area No. 24 (the "Master Plan") approved by vote of the Authority on ____________ ___, 1986 (the "Vote") after notice and public hearing at its meeting held on ____________ ___, 1986 subject to Environmental Reviews described in Paragraph 4 and the Design Review Process described in Paragraph 5. A certified copy of the Vote is attached hereto as Exhibit A together with a copy of the Master Plan.

3. It is anticipated that the Applicant, acting pursuant to Section 3-1A of the Boston Zoning Code (the "Code"), will submit to the Authority for the Authority's approval one or more development plans for the Locus (the "Development Plans"). The Authority acknowledges that it has completed its design review only in connection with the Master Plan's development concept, permitted uses and density and that Development Plans will be submitted for Authority review and approval, including approval of a specific development program, i.e., the location, masses, heights or uses of specific buildings and the allocation of space to particular uses.

4. The Applicant will conduct any environmental reviews reasonably requested by the Authority ("Environmental Reviews") in accordance with the Authority's "Development Review Procedures" which is attached hereto as Exhibit B ("Development Review Procedures"). The applicant acknowledges that Environmental Reviews may include, without limitation, consideration of transportation/traffic, wind, shadows, sunlight, excavation and landfill, groundwater, solid and hazardous wastes/materials, noise, flood hazard zone/wetlands, construction impacts, historical landmarks, air quality, utility systems, energy, water quality and solar glare.

4A. The Applicant shall submit a transportation access plan to the Commissioner of Transportation and the Director of the Authority. The transportation access plan will identify construction, traffic, and parking impacts and specify mitigating measures that are satisfactory to the Commissioner of Transportation and the Director of the Authority.

5. The Applicant and the Authority hereby agree that the design review process required by the Development Plans to be observed by the parties ("Design Review Process") shall be as set forth in the Development Review Procedures, including reviews of the Development Concept, Schematic Review, Design Development and Contract Documents. The Applicant and the Authority hereby further agree that, as mutually agreed upon by the parties, the Design Review Process may be undertaken separately for each building, or for any group of buildings to be constructed on the Locus. Capitalized terms used and not defined herein shall have the meanings ascribed to them in the Design Review Process.

6. The Applicant has contracted with Kallmann McKinnell & Wood to provide design assistance and master planning for the Master Plan and related documentation.

7. Throughout the Design Review Process discussed in Section 5 above, it shall be the Applicant's responsibility to promptly notify the Authority of proposed changes to public lobbies and arcades visible from the exterior of buildings, to open spaces and landscaping and to exterior features of buildings from previously approved submissions (other than refinements or details generally consistent with such previously approved submissions), and to obtain approval from the Authority prior to incorporating them into the drawings and specifications. The Authority shall perform its functions under this provision promptly and with all reasonable dispatch, and shall use its best efforts to notify the Applicant of its approval or disapproval (and its reason therefor) of such changes within three (3) business days after receipt of such notice.

8. Once Contract Documents have been approved, the only further

submissions to be made by the Applicant to the Authority for review and approval hereunder will be contract addenda and requests for change orders in the construction of those items subject to the Design Review Process which differ from or were not fully described in the Contract Documents. The Authority shall perform its functions under this provision promptly and with all reasonable dispatch, and shall use its best efforts to notify the Applicant of its approval or disapproval of such submissions within five (5) business days after receipt thereof.

9. Except as otherwise provided herein, the Authority will review and act upon the submissions required by the Design Review Process in the manner set forth in this Section 9. If the Authority finds any such submission(s) inconsistent with the previous submissions, it shall notify the Applicant of the respects in which the same is deemed to be inconsistent. If the Authority finds the submission(s) consistent, it shall so notify the Applicant and indicate the same thereon. The Authority shall perform its functions under this Agreement promptly and with all reasonable dispatch, and shall use its best efforts to notify the Applicant of its approval or disapproval and its reasons therefor of such submissions within ten (10) business days after receipt thereof. The Authority may waive such of its procedures and requirements at it deems appropriate.

10. The Authority will, once Development Plans for respective portions of the Locus have been approved, informally advise the Applicant concerning, and will actively cooperate with and publicly support, the Applicant's efforts to obtain from the appropriate

municipal, state and federal bodies and agencies all such permits, licenses and approvals and exceptions, variances, and other departures from the normal application of the applicable zoning and building codes and other ordinances and statutes which may be necessary in order to carry out the development of the Locus in the most expeditious and reasonable manner.

11. The Authority acknowledges that the Applicant will rely on the Authority's approval of the development concept, land uses and density contemplated in the Master Plan (the Applicant acknowledges that such approval does not constitute approval of specific Development Plans) during the preparation and submission of Development Plans, and in connection with other planning, design, financing and construction of the Project. The Authority also acknowledges that the Applicant will expend considerable time, effort and financial resources to produce Development Plans and to construct the infrastructure required in connection with the Project. Although Section 3-1A of the Code provides that no work can proceed on a project on the basis of an approved master plan unless and until a subsequent development plan for the proposed work has been approved by the Authority and the Zoning Commission, the Authority acknowledges that if such Development Plans are consistent with the development concept, land uses and density contemplated in the Master Plan, and subject to the Applicant's cooperation with the Authority in its Design Review Process and Environmental Review, then the Authority will expeditiously process the Development Plans submitted by the Applicant and publicly support the approved Development Plans.

12. After construction has commenced on the Locus, and provided that work within the PDA has commenced and is diligently proceeding, the Authority will, within 30 days of a request by the Applicant, file with the Building Commissioner of the City of Boston a certificate pursuant to Section 6A-1 of the Code indicating that work within the PDA has commenced and is diligently proceeding.

13. If, in the future, the Applicant shall, in its reasonable judgement, determine that it has become infeasible to proceed with the whole or a portion of the approved Master Plan or any approved Development Plans, then in such case and after substantiation by the Applicant deemed adequate by the Authority of the reasons for not being able to proceed, the Authority shall cooperate with the Applicant to modify, alter, amend or revoke its previous designation or votes in order to allow the Applicant the opportunity to reasonably develop the land that it owns or leases. If the parties acting in good faith cannot agree as to an appropriate alteration, modification or amendment to the Master Plan or any approved Development Plans, if the Applicant so requests, the Authority agrees to promptly take necessary steps to revoke the PDA designation for all or any portion of the Locus.

14. The Authority hereby acknowledges approval of the Master Plan as voted by the Authority on _______________, 1986 as to the development concept, permitted uses, and density, but not as to a specific development program, that is not as to building locations, mass, height, other charateristics of individual buildings or uses, or the allocation of space to particular uses. The Authority also

acknowledges that, prior to approving the Master Plan and pursuant to Section 26-3 (1) of the Boston Zoning Code, the Authority found that the Master Plan conforms to the general plan for the City as a whole and that nothing in the Master Plan will be injurious to the neighborhood or otherwise detrimental to the public welfare.

15. The Applicant shall submit a plan, to be known as a Boston Residents Construction Employment Plan to the Director of the Authority which plan shall set forth in detail the Applicant's plans to ensure that its general contractor, and those engaged by said general contractor for construction of the proposed development on the Locus on a craft by craft basis, meet the following Boston Resident Constructions Standards: (1) at least 50 percent of the total employee workerhours in each trade shall be by bonafide Boston residents; (2) at least 25 percent of the total employee workerhours in each trade shall be by minorities; and (3) at least 10 percent of the total employee workerhours in each trade shall be by women. The Applicant shall include in the plan provisions for monitoring, compliance and sanctions. The Applicant shall submit the plan to the Director of the Authority prior to issuance of a building permit for the first building to be constructed. For purposes of this Section 15, workerhours shall include, without limitation, on-the-job-training and apprenticeship positions.

16. The Applicant shall formulate an Employment Opportunity Plan which shall provide for the Applicant's good faith efforts to achieve a goal that 50 percent of the permanent employment opportunities created by the Project shall be made available to Boston residents, including residents affected by proposed development on the Locus.

The Applicant shall submit the plan to the Director of the Authority prior to issuance of a building permit for the first building to be constructed.

17. This Agreement shall be binding upon and enforceable against the successors and assigns of the parties hereto, it being understood and agreed that the Applicant shall have a right to transfer or assign its rights and interests in all or a portion of the Locus and under this Agreement. The Authority agrees to look solely to the interest from time to time in each building to be constructed on the Locus, whether owned by the Applicant or its successors and assigns (including, without limitation, mortgagees), as the case may be, for any claim against the Applicant or its successors and assigns arising under this Agreement in connection with such building or buildings. Furthermore, but without limiting the foregoing, liability arising under this Agreement in connection with one of the buildings to be constructed on the Locus shall be limited to the interest of the Applicant or its successors and assigns (including, without limitation, mortgagees) in such individual building. In illustration, but not in limitation of the foregoing, if separate successors to the Applicant each own one of the buildings to be constructed on the Locus, then the owner of one such building shall have no liability under this Agreement in connection with the other such building. Neither the Applicant nor any trustee, beneficiary, partner, stockholder, manager, officer, director, agent, or employee of the Applicant or its successors and assigns shall ever be personally or individually liable under this agreement nor shall the

Applicant or any such trustee, beneficiary, partner, stockholder, manager, officer, director, agent or employee of the Applicant or its successors and assigns ever be answerable or liable in any equitable proceeding or order beyond the extent of its or their interest in the applicable building or buildings.

18. The parties agree that a portion of Northern Avenue now owned by the City of Boston has been included in the PDA for purposes of convenience so that in the event the City conveys all or a portion of such land to the Applicant in connection with the proposed relocation of Northern Avenue such land may be included in the project to be constructed on the Locus by the Applicant without need for further action by the Authority or the Zoning Commission, but no inferences are to be drawn that any approval for said relocation has been obtained by said zoning action per se.

Approved as to Form:

BOSTON REDEVELOPMENT AUTHORITY

By: ____________________

THE BOSTON MARINER COMPANY, INC.

By: ____________________
President

COOP:sg

The Boston Marine
Company, Inc.

Real Estate Development
and Investment

Ellen A. Watts
President

85 East India Row

Suite 41E

Boston, MA

02110

617 720 0775

Ms. Karen Jennings-Flynn
Boston Redevelopment Authority
City Hall Plaza
Boston, Massachusetts

March 20, 1986

Re: Revisions to Pier 4 Development Impact Project Agreement and Cooperation Agreement for Planned Development Area 24

Dear Ms. Jennings-Flynn:

Enclosed please find two signed copies of the Development Impact Agreement and the Cooperation Agreement containing the same changes which Hale and Dorr have negotiated on behalf of HBC Associates.

Very truly yours,

Ellen A. Watts

Ellen A. Watts
President

Enclosures

Flynn:sg

LIST OF MEETINGS WITH THE COMMUNITY

PIER 4, SOUTH BOSTON

The Applicant has met with the following community groups about the development plans for Pier 4:

Organization	Meeting Date
Civic Advisory Committee (Fan Pier/Pier 4)	June 21, 1985 August 7, 1985 September 18, 1985 November 5, 1985 November 12, 1985 December 3, 1985 December 18, 1985 January 6, 1986 January 9, 1986 January 16, 1986 (Scheduled)
Harborpark Advisory Committee	June 25, 1985 November 12, 1985 December 11, 1985 January 6, 1986 January 8, 1986 January 9, 1986
Water Transportation Task Force	November 18, 1985
Boston Society of Architects	September 5, 1985 November 12, 1985
The Boston Harbor Associates	December 12, 1985
Our Lady of Good Voyage (Northern Avenue, South Boston)	November 24, 1985 December 8, 1985
The Boston Globe, Editorial Board	December 12, 1985
Boston Preservation Alliance	November 12, 1985 November 21, 1985
Boston Educational Marine Exchange	January 13, 1986
South Boston Community Meeting (Condon Community School)	January 14, 1986 (Scheduled)

COMMUMTG:sg

DRAFT PROGRAM

Note: This is a working Draft Program
A definitive program has not been approved by ICA Board

February 24, 1987

	Approx. Square Footage
Flexible Exhibition Space/Galleries	35,000
Proscenium Theatre/Lecture Hall 350 seats	8,550
Experimental Theatre/Film & Video 150 seats	2,250
Seminar/Classrooms	2,000
Administrative Offices (25-40 people) and Meeting Rooms	8,000
Museum Store	5,000
Restaurant-150 seats and Kitchen	3,000
Support and General Storage ("Dirty") Shops and Maintenance	10,000
Fine Art, High Security Storage ("Clean")	10,000
Marine Related Uses	3,000
Total	86,800
At 75% efficiency Total	110,000-115,700

ICA
THE INSTITUTE OF
CONTEMPORARY ART
955 BOYLSTON STREET
BOSTON
MASSACHUSETTS
02115
(617) 266-5152

MEPA

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SECRETARY OF
ENVIRONMENTAL AFFAIRS

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JAN 29 1987

January 27, 1987

Mr. James Hoyte, Secretary
Commonwealth of Massachusetts
Executive Office of Environmental Affairs
110 Cambridge Street
Boston, Ma. 02202

Dear Secretary Hoyte,

As Director of The Institute of Contemporary Art I am writing to you to enthusiastically endorse the Fan Pier and Pier 4 proposals as set forth in the recently filed Final Environmental Impact Report.

Especially impressive is the extensive program of public benefits for the Fan Pier and Pier 4. Almost a mile and a half of harborwalk and canal promenade, an amphitheater, a waterfront park, a marina, a 1,000 linear foot canal, and a waterfront plaza are all to be included. Sixty percent of the total area of these two developments will be publicly accessible open space. This will provide a beautiful setting from which Bostonians and our tourists can view the beauty of Boston and its Harbor.

In particular, the developers' decision to include on the site a new Institute of Contemporary Art should be hailed as a major act of public spirited patronage unprecented in recent history. Present plans are for the City of Boston to use a state grant to build the approximately 85,000 square foot building on the site which will be donated on the basis of a long-term leasehold by HBC Associates and Anthony Athanas. Private funds will be used to fund operation of the cultural facility. The building will include over 25,000 square feet of galleries, a small media theater (for our film and television/video programs) a medium-scaled theater (for lectures, performance and dance), classrooms, a restaurant, a museum store and other visitor amenities. (Some of these will be designed in conjunction with the planned marine/taxi facility to be located in the building as well).

This will be the first major public cultural building built in Boston in 72 years. If Boston does not choose to enrich its cultural heritage now in a time of prosperity, when will it do so? A great deal of the acknowledged charm and attractiveness of the City today is directly attributable to such public cultural facilities. The short and long-term benefits of similar projects undertaken in cities such as Los Angeles or San Francisco are widely recognized.

50 years

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955 BOYLSTON STREET
BOSTON
MASSACHUSETTS
02115
(617) 266-5152

It is clear to us that the Fan Pier is an ideal location for a cultural facility as is demonstrated by the proximity and success of The Children's Museum, Computer Museum, Boston Tea Party Ship and Museum, and New England Aquarium. We believe The ICA will play an important role in the continued development of the City's harborfront museum community.

Of real importance to us is the fact that the Fan Pier and Pier 4 developments are the results of exciting collaborative efforts of some of the world's most significant architects. Such a location is thus all the more logical for a contemporary art institution. Located on the western edge of the project, the new ICA facility will greatly increase access to the Fan Pier and Pier 4 by a wide spectrum of society by serving as an attraction drawing people to the water's edge. I should note that we believe that the nature of the building's use is unlikely to materially impact traffic, in particular rush hour traffic, in the area. Our greatest periods of use will come on weekends, during the evenings, and by school groups during the middle of the typical weekday.

Finally, the Fan Pier and Pier 4 proposed cultural facility will fill a void currently existing within Boston's cultural community while complementing the city's plans for a downtown cultural center. The time is right for Boston to develop a major contemporary art facility. Boston needs and deserves an expanded ICA - Boston needs the Fan Pier project! Please support the Environmental Impact Report.

Very truly yours,

David A. Ross
Director

THE COMMONWEALTH OF MASSACHUSETTS COUNCIL ON THE

arts and humanities

80 BOYLSTON STREET 10TH FLOOR BOSTON MA 02116 617 727 3668

2 February 1987

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FEB 02 1987
OFFICE OF THE SECRETARY
OF ENVIRONMENTAL AFFAIRS

Mr. James Hoyte, Secretary
Commonwealth of Massachusetts
Executive Office of Environmental Affairs
100 Cambridge Street
Boston, MA 02202

RE: Final EIR EOEA #4426/4584

Dear Secretary Hoyt:

I am writing to you to enthusiastically endorse the Fan Pier and Pier 4 proposals set forth in the recently filed Final Environmental Impact Report.

Having spent the past ten years working with the Massachusetts Council on the Arts and Humanities to consistently extend the cultural offerings of the Commonwealth, I am most particularly impressed by the prospect of a waterfront site for a major cultural facility which will include a new home for the Institute of Contemporary Art. This would be the first major institution of its kind built in Boston in 70 years. Massachusetts is currently enjoying a kind of cultural Renaissance. Recent surveys have indicated that many young graduates of the area's many colleges and universities chose to remain in the Commonwealth because of the cultural offerings. People choose to live in Massachusetts, even when offered higher salaries elsewhere, due to the cultural programs and amenities offered to the citizens of this Commonwealth. The development of the Fan Pier area could only add to these statistics by offering a home to the internationally recognized Institute for Contemporary Art and further developing Boston as a cultural center.

Sincerely,

Anne Hawley
Executive Director

AH:mlm

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ENVIRONMENTAL AFFAIRS

Nicholas T. Zervas Chairman
Anne Hawley Executive Director

MEPA cc: Jam Gene

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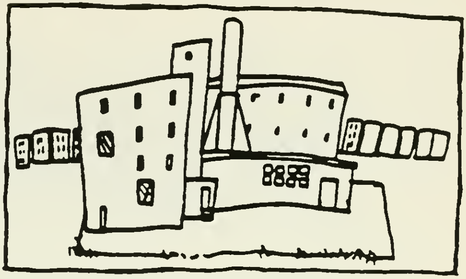
JAN 20 1987

OFFICE OF THE SECRETARY OF ENVIRONMENTAL AFFAIRS

SOUTH BOSTON ARTISTS



516 E. SECOND ST.

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JAN 24 1987

OFFICE OF THE SECRETARY OF ENVIRONMENTAL AFFAIRS

January 12, 1987

Mr. Lawrence Dwyer, Chairperson
Fan Pier Citizen Advisory Committee
c/o Boston Community Schools
26 West Street
Boston, MA 02111

Dear Mr. Dwyer:

As the Board of the South Boston Artists' Group, based at 516 East Second Street, we are grateful for this opportunity to express our views of the proposed developments at Fan Pier and Pier Four. Though not immediate abutters to the Piers, we are situated within the Harborpark Interim Planning Overlay District, our studios overlook the proposed development site, and we share the concerns of our fellow South Boston residents regarding density, traffic, and accomodation of the needs of low-income and elderly citizens in the final planning stages of this important project.

Our studios were developed in the old distillery building, which was built in the 1840's on the site of Boston's Colonial Period Rum Distillery. We are committed to preserving the historic character of this structure and to maintaining the building's current use as artists' studios -- a use that imposes minimal structural alterations upon the integrity of this South Boston landmark. With the help of a sympathetic landlord, and the City's Inspectional Services and Arts agencies, we preserved our studios from conversion to a higher use in August of last year.

Among our goals as an organization is that of securing for South Boston its rightful share in the cultural rebirth that the entire City enjoys today. The City's new committment to the arts -- exemplified by the City's assistance to our Group, the BRA's negotiation of five year lease extensions for FPAC members, and the Mayor's creation of the City's first Arts agency -- has emboldened us to become participants in the policy-making that affects us, our neighborhood, and our creative livelihoods. On the whole, we believe that inclusion of cultural uses in the proposed Fan Pier and Pier Four developments will be to the advantage of our neighborhood.

All of Boston can gain from the relocation of the Institute of Contemporary Art at Fan Pier. As the oldest contemporary art institution of its kind in North America, at 51 years-of-age the ICA deserves a permanent home. In addition to the general public benefits the ICA provides, the local arts community will benefit directly from the accompanying employment and exhibition opportunities this project will produce.

Further, we believe that the proposed inclusion of permanent artists' live/work studios at Fan Pier would be a favorable development for our neighborhood and for the community-at-large. Studies show that artists produce jobs in related uses at a rate of two to one, and that cultural activities return dollars to the City at a rate three times that of sports activities. (See attached Globe article.) With Friends of Boston Art estimating that 46% of the City's 7,000 visual artists are currently facing displacement, we believe that all new live/work studio units created in the Fan Pier and Pier Four developments must be open to artists from every one of Boston's neighborhoods, without preference or prejudice to any single organization of artists, whatever its current location or sphere of influence.

As a matter of general public policy, we encourage the City to continue to utilize all appropriate resources for the purpose of strengthening and stabilizing existing artists' studio developments throughout the City, in addition to their efforts to promote creation of new live/work studio space.

Again, our thanks for this opportunity to share our concerns.

Sincerely,

George Killeen

George Killeen
Artist

Mary Kaye

Mary Kaye
Associate Professor,
Art Institute of Boston,
Artist

John Donovan

John Donovan
Artist

cc: Hon. Raymond L. Flynn, Mayor, City of Boston
Hon. James Hoyt, Secretary of Environmental Affairs, Commonwealth of Massachusetts
Hon. James Kelly, Councillor, City of Boston
Hon. Stephen Coyle, Director, Boston Redevelopment Authority

Study says cultural events profitable for city

By Michael K. Frisby
Globe Staff

The Flynn administration, in an effort to encourage Boston businesses to increase their donations to the arts, has completed a study indicating that cultural exhibits and events contributed $166 million to the city's economy in 1984.

Bruce Rossley, city arts administrator, said the administration hopes to use the figures to encourage businesses, particularly those benefiting directly from cultural events, to make contributions to the arts.

"People often think of sports as a big business and the arts as a frill," said Rossley. "But when corporations give to the arts we can show that money is pumped back into the economy and the arts also contribute to the quality of life."

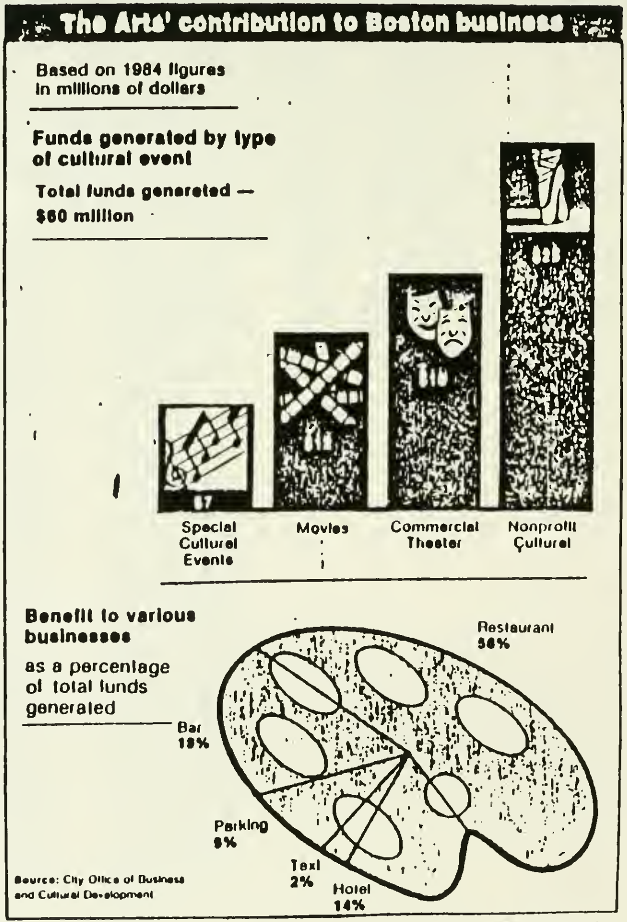
Moreover, Rossley said, the study showed that cultural events generated a larger economy than sports – $166 million compared with $64 million in 1984 – and service industries, such as parking lots, taxis, hotels, restaurants and bars, benefited greatly from cultural events.

The study found that nonprofit cultural groups, such as museums, generated $98 million into the economy in 1984; commercial theaters, $32 million; movies, $24 million; and special cultural events, $14 million.

When people attended those events, Rossley said, they spent $5.4 million on parking, $1.2 million on taxis, $8.4 million on hotels, $33.6 million on restaurants and $11.4 million in bars.

"This emphasizes that the private sector should support the arts because the arts have a major impact on the business community in the city," said Rossley.

The Arts' contribution to Boston business



Source: City Office of Business and Cultural Development

GLOBE CHART BY STEVEN NELSON

Rossley's study said nonprofit cultural organizations received $46 million in publi and private grants in 1984.

Rossley also said the city paid $24.6 million for direct services and capital costs needed to accommodate the nine million people who attended cultural events in the city last year.

But, Rossley said, the state – through various taxes – and not the city received financial benefits from the events.

"The city is happy to provide these services. Boston is still the Athena, but we will need more support for the arts from the private sector," said Rossley, adding that he plans to sit down with business leaders and discuss the results of his study.

Lawrence Murray, executive director of Arts/Boston Inc., said it is important that a study has been done calculating the value of cultural events to the city.

"That puts it in dollars and cents. Some businessmen only understand dollars," Murray said.

He also said contributions from service industries directly benefiting from cultural events have been inconsistent, and that "the people who benefit the most seem to give the least."

Meanwhile, James B. King, president of the Massachusetts Cultural Alliance, said the city's study can be used to help create "a public feeling and obligation" for the arts.

King noted that the cultural richness – museums, colleges and art galleries – are an important fabric of Boston.

James Sullivan, president of the Boston Chamber of Commerce, said the business community plays an important role in supporting the arts by making financial contributions and serving on boards of many cultural organizations. He said the business leaders are aware that cultural events are an important contribution to the "quality of life" in Boston.

GREATER
BOSTON
CONVENTION & VISITORS BUREAU

Prudential Plaza Box 490
Boston, MA 02199 (617) 536-4100
Telex 506436 1-800-858-0200

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FEB 02 1987

OFFICE OF [illegible]

February 2, 1987

Mr. James Hoyte, Secretary
Commonwealth of Massachusetts
Executive Office of Environmental Affairs
100 Cambridge Street
Boston, Massachusetts 02202

RE: Final EIR EOEA #4426/4584

Dear Secretary Hoyte:

The Greater Boston Convention and Tourist Bureau enthusiastically supports the Fan Pier and Pier 4 proposals documented in the recently filed Final Environmental Impact Report. These projects involve some of the greatest architects in the world and will transform mostly vacant land which now blocks active public use of this portion of Boston Harbor into a vital urban area through significant private investment.

Further, the Fan Pier and Pier 4 developments will boost Boston's tourism industry. The site will be another important tourist destination on account of its waterfront location, accessibility to Logan Airport, and the major new facility which will house cultural groups. The extensive program of public amenities for the Fan Pier and Pier 4 will also prove to be a major attraction. Almost a mile and a half of harborwalk and canal promenade, an amphitheatre, a waterfront park, a marina, a 1,000 linear foot canal, and a waterfront plaza are all to be included. Sixty percent of the total land area of these two developments will be publicly accessible open space.

The Fan Pier will also serve as a catalyst for the development of tourist-based water transportation. For example, the proposed cultural boat loop would stop at the Fan Pier's new arts facility. The developers also envision direct water links from the site to Logan Airport plus on demand water-taxi.

The spirit of Massachusetts
is the spirit of America.

The economic benefits from these development to Boston, and South Boston in particular, are substantial. Projections indicate a total of 3,400 construction jobs and 10,250 permanent jobs will result. The developers will also contribute to the city $3 million in linkage funds for job training. Over $25 million annually in sales and property taxes will be generated for the city and state. On-site subsidized housing and $15 million in housing linkage payments by the developers will address the city's need for more affordable housing.

The Greater Boston Convention and Tourist Bureau urges speedy approval of the Final Environmental Impact Report so that the city and state may benefit from these developments as soon as possible.

Sincerely yours,

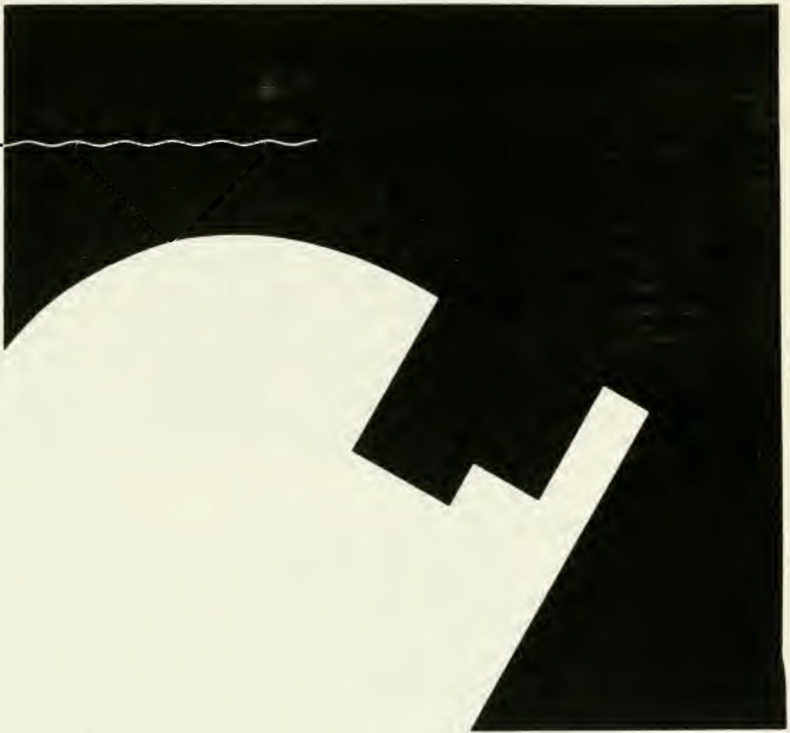
Robert E. Cumings
President

cc: Richard L. Friedman
Anthony Athanas

Transportation Impact and Access Plan

Fan
Pier
Development

Pier
4
Development



Submitted to:
The Boston Redevelopment Authority

Developers:
HBC Associates (Fan Pier)
The Boston Mariner Company (Pier 4)

MAR 16 1987

Fan Pier and Pier 4

Executive Summary

Transportation Impact and Access Plan

Prepared for the Boston Redevelopment Authority

March 1987

Preface: Boston's traffic is of growing private and public policy concern. Improvements have been planned by the city and state which can play an important role in easing the city's traffic burden. Major reconstruction and improvement programs to the public transit system are currently underway and promise an even better system which should increase usage. Federal funding commitments for major transportation projects in Boston, specifically the Third Harbor Tunnel, Central Artery depression, and Seaport Access Road projects seem closer than ever to final approvals. Boston's particular traffic and transportation opportunities require extensive planning and coordination, and represent a unique, important component of any private developer's planning. The Fan Pier and Pier 4 developers recognize the key place transportation planning has in the overall development process.

Aim: The Fan Pier and Pier 4 developers have conducted the most detailed transportation planning and mitigation analysis ever undertaken by a private project in Massachusetts. The developers are strongly committed to addressing the unique transportation issues presented by the projects themselves, and to working with the city and the state to solve the larger problems posed by the areas immediately surrounding the projects. The team feels that such coordinated efforts can have a lasting, positive impact on the entire scope of transportation issues facing Boston.

Specific Measures: Since the completion of the Fan Pier and Pier 4 Final EIR, efforts have focused on resolution of three major issues: construction access, traffic monitoring, and impact mitigation. These three analyses and other traffic data are presented in the Traffic Access Plan, the body of this report. Major conclusions are summarized below.

Construction Analysis. Early 1989 and 1990 will be the busiest periods for construction truck traffic and worker activity. This analysis shows there is no significant impact from construction activities at the project sites in these years. Furthermore, specific construction mitigation measures -- signals at the new Northern Avenue/Atlantic Avenue intersection, and the imposition of P.M. peak hour

parking restrictions on Atlantic Avenue, Summer Street, and Congress Street -- will significantly improve current conditions. Additionally, the use of designated truck routes, away from residential areas, will ensure that the South Boston neighborhood is protected from project construction truck traffic.

Traffic Monitoring. The purpose of the monitoring program is to measure future site-generated traffic and the future volume of traffic on roadways. Monitoring includes: site-generated traffic; demand created by adjacent or background development; and roadway capacity. Each year the volume of traffic generated by the site and volume of traffic at selected locations along the impact area will be reported to the city. In addition, the program will forecast four-year projections of site and area traffic volumes. The scope of this four-year access plan will include a re-analysis of project-generated travel demands as well as demands created by other developments in the area. The plan will also report on the status of public highway and transit improvements. Finally, the monitoring program will evaluate mitigation measures to minimize impacts.

Impact Mitigation. Extensive mitigation measures are proposed to reduce potential adverse traffic and parking impacts. These measures, outlined on the accompanying table, fall into seven major categories. Four of these mitigation categories were recommended in the Final EIR: Required Transit Services; Traffic Operations Improvements; New Roadway Capacity; and Demand/Reduction/Management. The other three actions were developed since the completion of the EIR:

- a set of measures designed expressly to mitigate construction impacts;
- a Transportation Management Association which will be responsible for installation and operation of all monitoring equipment necessary for the monitoring program;
- a set of demand reduction measures which may be implemented in order to meet the goals of the monitoring program; and

- potential financial contribution to mitigation measures required as enhancement to the mitigation program.

Conclusion: The Fan Pier and Pier 4 developers have created a monitoring and mitigation program that allows periodic updates of a Northern Avenue area wide transportation plan. This plan will closely study conditions at key intersections serving the area and propose measures for dealing with the conditions reported. In addition, an annual updated access plan will be prepared to analyze future traffic projections. The developers believe these measures are a responsible and effective approach to ensuring a successful traffic system for the area.

Summary of Mitigation Measures

Category	Mitigation Measure	Implementing Agency	Proponent Contribution
Required Transit Services	o Shuttle bus system	o MBTA	Assistance in operation planning, on-site improvements for boarding/alighting areas, and interim service contract prior to public operation
	o Suburban express bus system	o MBTA, Private bus operators	Assistance to operators for route planning completed
Traffic Operations Improvements	o Intersection-Related improvements	o BTD	Planning services for intersection design completed
	o Arterial-Related improvements	o BTD, MDC	Planning service has been completed for engineering and streetscape improvements
	o System-Related improvements	o BTD	Work with city to devise delivery vehicle scheduling policy
	o South Boston Transportation Study	o BTD	Partial funding of study has occurred
New Roadway Capacity	o Advance construction of links to Seaport Access Road	o BTD, MDPW	Planning services completed
	o South Boston Bypass Road	o MDPW, BTD	Planning services completed
	o Reopening of Dorchester Avenue	o BTD, MDPW, USPS	Planning services completed
Demand Reduction/ Management	o MBTA rapid transit improvements	o MBTA	Planning coordination with MBTA
	o Water shuttle	o MBTA, BRA, EOTC, Massport	Feasibility study completed. Boat landings and passenger facilities to be provided on site. Provision of promotional materials to tenants
	o Water taxi	o MBTA, BRA, EOTC	Sponsoring pilot demonstration program with interagency coordinating committee
	o Pedestrian access	o BTD, BRA, MDPW	Old Northern Avenue to have ample pedestrian environment funded by proponent on north side adjacent to Fan Pier and Pier 4
	o Agency coordination and liaison	o Various agencies, Fan Pier/Pier 4 developers	Provide continuing coordination with agencies

---

* BRA = Boston Redevelopment Authority
BTD = Boston Transportation Department
CTPS = Central Transportation Planning Staff
EOTC = Executive Office of Transportation and Construction
Massport = Massachusetts Port Authority
MBTA = Massachusetts Bay Transportation Authority
MDC = Metropolitan District Commission
MDPW = Massachusetts Department of Public Works
USPS = United States Postal Service

Summary of Mitigation Measures
(continued)

Category	Mitigation Measure	Implementing Agency	Proponent Contribution
Construction-Related	o Designated truck routes to and from sites	o Project Developers	Construction contracts to prohibit use of South Boston neighborhood streets
	o Use of second shift to reduce maximum hourly truck volume	o Project Developers	Construction contracts to specify spreading of excavation over a 16-hour day
	o Limits on size of trucks	o Project Developers	Construction contracts to specify maximum capacity based on legal load limitations
	o Transit information for construction workers	o Project Developers	Developers to distribute transit route and schedule information to all construction contractors
Transportation Management Association (TMA)	o Monitoring traffic continuously	o TMA	Membership in and equitable financial support of TMA
	o Reporting to City	o TMA	Membership in and equitable financial support of TMA
Measures To Meet Monitoring Program Goals	o Promotion of flexible work hours	o Project Developers	Developers to encourage tenant employers to institute flexible work hours
	o Transit Incentives	o Project Developers, Tenant Employers	Information, marketing, pass sales and employer pass subsidies
	o Ridesharing promotion and matching	o Caravan, Tenant Employers, TMA	Membership and equitable financial support of TMA
	o Preferential carpool and vanpool parking location	o Project Developers	Developer to set aside parking spaces for carpools and vanpools
	o Different parking rates for carpools	o Project Developers	Developer to provide preferential rates for carpools
	o Sponsorship of vanpools	o Caravan, Tenant Employers, TMA	Membership in and equitable financial support of TMA
	o Hotel marketing, information and airport shuttle	o Hotel operators TMA	Coordination to promote use of project hotels by visitors to immediate area of project.
	o Parking restrictions	o City	
	o Channelization and Signal Improvements	o City	
	o Incident Response	o City	

BRA = Boston Redevelopment Authority
BTD = Boston Transportation Department
CTPS = Central Transportation Planning Staff
EOTC = Executive Office of Transportation and Construction
Massport = Massachusetts Port Authority
MBTA = Massachusetts Bay Transportation Authority
MDC = Metropolitan District Commission
MDPW = Massachusetts Department of Public Works
USPS = United States Postal Service

FAN PIER and PIER 4

TRANSPORTATION IMPACT

AND ACCESS PLAN

proposed for

CITY OF BOSTON
BOSTON REDEVELOPMENT AUTHORITY
and
BOSTON TRANSPORTATION DEPARTMENT

MARCH 1987

prepared by

VANASSE HANGEN BRUSTLIN, INC.
Consulting Engineers & Planners
60 Birmingham Parkway
Boston, Massachusetts 02135

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TRANSPORTATION IMPACT ASSESSMENT AND MITIGATION

INTRODUCTION

The purpose of the Transportation Access Plan is: to describe the use of existing roadway, parking, and transit facilities serving the South Boston area; to characterize existing state and city plans for upgrading these systems and facilities; to assess the effects of the Fan Pier and Pier 4 Developments on existing and future transportation systems in 1995 (completion of the developments); and to examine and identify implementation measures to mitigate adverse impacts. Additional descriptions, data and computations are presented in the Appendix.

Estimates of travel demands for the Fan Pier and Pier 4 Developments are based upon the proposed programmatic uses for the two projects. The results of three separate transportation analyses are presented in this report:

1. 1985 - Existing Conditions
2. 1995 - No-Build
3. 1995 - Completed Development of Fan Pier and Pier 4

Transportation networks assumed for each of the three analysis conditions are:

1. 1985 - Existing street and highway network
2. 1995 - The 1985 network plus addition of the Seaport Access Road and Third Harbor Tunnel portions of the I-90/I-93 project, plus Relocated Northern Avenue and the new Northern Avenue Bridge.

For the 1995 analysis year, transportation forecasts include demand from existing and likely new land uses in the northern commercial/industrial area of South Boston and in Downtown. For the purposes of this impact assessment, the Final Fan Pier/Pier 4 EIR Master Plans are examined.

The Transportation Impact Assessment and Mitigation portion of this Access Plan is organized into several major sections. These are listed below, along with the general content of each section.

Introduction. The Introduction includes general background information to set the context of the Traffic and Parking analysis, defines the study area and traffic analysis locations, and outlines the general methodology used in the traffic and parking analysis.

Description of the Environment. This section provides information on current transportation-related conditions within the study area. Three topics are discussed: (1) traffic conditions along streets, highways, and the main analysis locations; (2) the public transportation system, including rapid transit, local and express bus, commuter rail and commuter boat; and (3) parking facilities on or near the project sites.

Assumed Future Transportation System. Additions or improvements to the transportation system expected by 1995 have been included in the impact analysis. This section describes all roadway improvements expected to be constructed and open to traffic by 1995 and all transit improvements expected to be operational in 1995.

Probable Project Impacts. The Impacts section begins with an estimate of person and vehicular travel demands created by the projects in 1995. Trips from other background developments likely to be built are also estimated. Travel demand characteristics for both the projects and background developments have been estimated assuming that urban densities, parking conditions, and transportation service in the Northern Avenue area of South Boston will be similar in nature to those found in Boston's Central Business District. The distribution of trips to various geographic corridors around the site is then presented, followed by the identification of impacts on roadways, parking facilities, and the public transportation system. Several scenarios are analyzed, including 1995 with and without the projects, but in both cases with the Third Harbor Tunnel/Seaport Access Road portions of the I-90/I-93 project. In 1995, the Depressed Central Artery portion of the I-90/I-93 project is not included. Impacts during project construction are also discussed in this section.

Mitigation Measures. Based on project impacts, a comprehensive program of measures to mitigate these impacts is presented in three general categories: (1) Demand Reduction/Management, (2) Traffic Operations Improvements, and (3) New Roadway Capacity. Roadway, transit, and parking-related measures are discussed, along with the identification of the party responsible for implementation and, where possible, the probable effect on traffic operations within the study area.

FAN PIER AND PIER 4 DEVELOPMENTS

The Northern Avenue area immediately across the Fort Point Channel from Downtown Boston has, in recent years, been the subject of public and private interests as the next area of expansion for Boston. Within this area,

the proposed development of the Fan Pier and Pier 4 will create approximately 2.1 million square feet of office and retail space, 1,100 hotel rooms and 1,100 residential units, all to be constructed within the next nine years.

With the exception of parking, all of the proposed development on the Fan Pier represents new uses. The proposed Pier 4 Development site currently contains only Anthony's Pier 4 Restaurant and its associated parking area. Anthony's Pier 4 Restaurant will remain, but the existing parking facilities will be relocated below ground level to make room for the project. Table 1 summarizes the anticipated development plans for Full Build in 1995.

TABLE 1
Final EIR
Master Plan
Development
Program

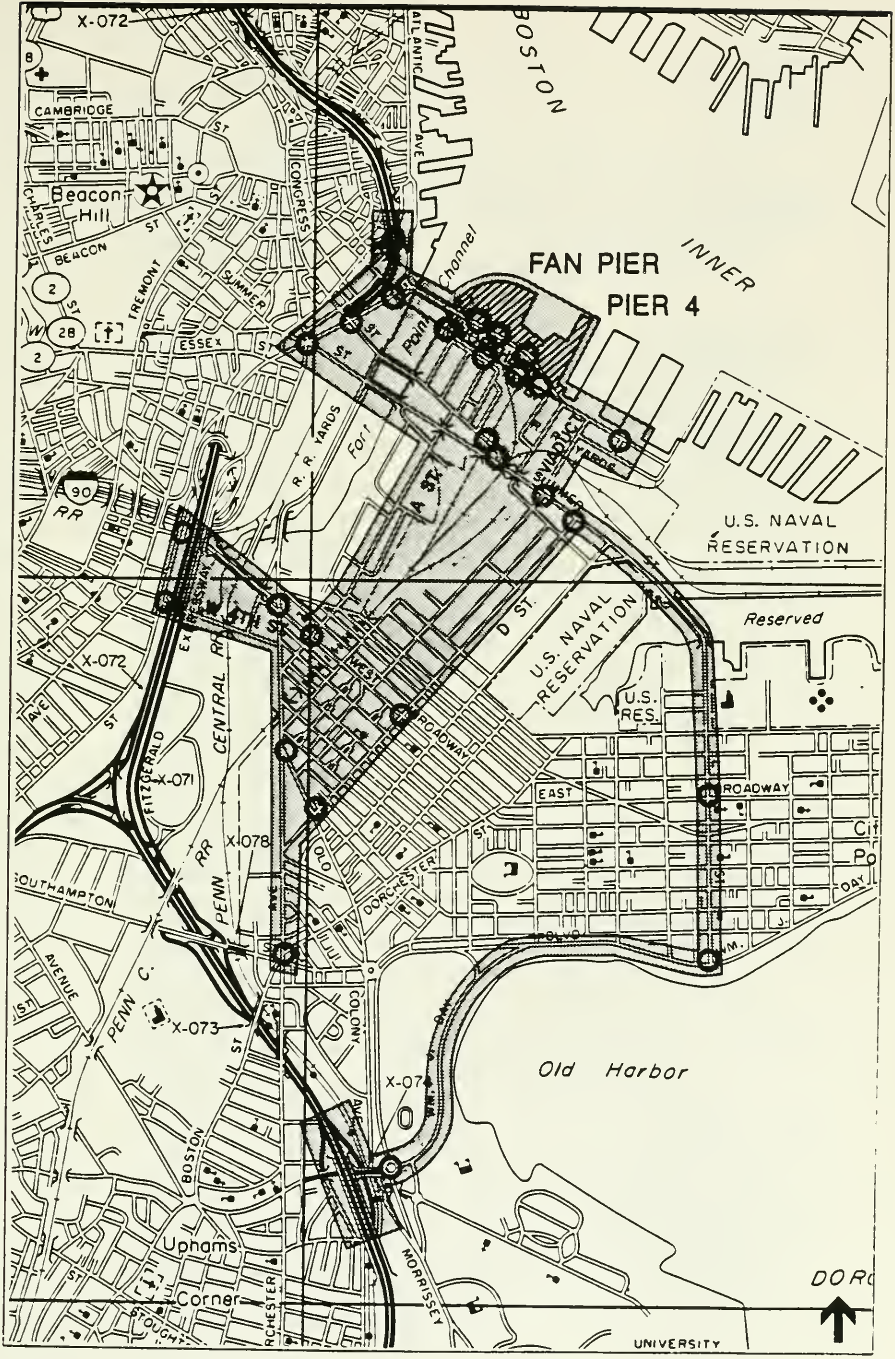
Phase	Office (sq. ft.)	Retail (sq. ft.)	Hotel (rooms)	Residential (units)	Parking (spaces)
1995 Full Build					
Fan Pier	1,325,000	155,000	806	597	2,500
Pier 4	572,000	79,000	290	500	2,650
Total	1,897,000	234,000	1,096	1,097	5,150

The PDA Plan for Fan Pier land use varies slightly from the FEIR Master Plan. PDA office use is 1,405,750 square feet, retail use is 168,100 square feet, and residential units are 536. The hotel space remains at 806 rooms. The PDA level use changes result in increasing AM peak hour traffic by 28 vehicles and PM peak hour by 30 vehicles. This change is not significant enough to warrant reanalysis, and the access report is therefore based on the FEIR Master Plan.

STUDY AREA

The transportation analysis encompasses a relatively large area of South Boston and adjacent sections of Downtown Boston as shown in Figure 1. The shaded area on the map represents the primary analysis area for the study. Twenty-seven key locations along the major commuter routes through this area have been chosen for analysis and are shown in Figure 1. Other streets and intersections will be impacted by the projects. However, the selected routes and analysis locations include those which are most seriously impacted, and thus provide adequate data for assessing project impacts

FIGURE 1
Traffic Study
Area



□
Study Area

○
Analysis
Locations

and travel conditions expected on a typical commuting day.

Public transportation directly serving the site is currently limited to two local bus routes. The nearest rapid transit stations are located at South Station (Red Line) and Aquarium (Blue Line). Commuter rail and express bus services are also available from South Station.

Land use within the study area is a mix of commercial, office, retail, residential, warehouse, and marine-related uses. The Fan Pier site is dominated by a large, inexpensive ($3.50 per day) commuter parking lot. Anthony's Pier 4 Restaurant and its related parking occupy the Pier 4 site. The immediate vicinity includes parking lots, the World Trade Center at Commonwealth Pier 5, industrial/warehouse properties, and vacant land. Commonwealth Flats, the Fish Pier, and the Boston Marine Industrial Park are situated to the east. Immediately across the Fort Point Channel is the financial district with the office, commercial, and retail developments of the Central Business District nearby. Much of the property along the Fort Point Channel in South Boston is changing in character due to development associated with the area's proximity to Downtown.

STUDY METHODOLOGY

The transportation access study was conducted in three distinct steps. Step I inventoried the existing travel demand characteristics in the area. The inventory included researching previous transportation reports as well as conducting new observations of area travel demands. Observations of traffic volumes were conducted at the locations shown in Figure 1 during the morning and evening peak travel hours. Roadway volumes were recorded over 24-hour periods. (Detailed traffic count data are included in the Appendix). In addition, data for transit line performance and ridership were researched from MBTA files to identify existing and future transit service. MBTA data were supplemented by conducting field observations of Red Line and Green Line performance and ridership during peak weekday travel periods. Detailed survey forms and results are included in the Appendix. Certain data available from previous planning studies and EIRs in the area were verified by means of recounts at selected locations in 1985. The existing transportation network served as a base condition for subsequent analysis.

Step II of the study built upon the data base in Step I and established the framework for evaluating the transportation impacts of the proposed projects. In this step, travel demand forecasts for the proposed development projects were determined along with forecasted demands created by other likely future developments in the area. Estimates were made for both vehicular and public transit modes.

Forecasting travel demands to the entire South Boston development area was accomplished through recognition of several key factors that will influence travel behavior to and from the area in the future. First of all, the projects and background development programs will create a Downtown urban environment, vastly different from the sprawling almost suburban-like conditions found in the project area today. In this environment, parking supply will be limited and, since it will be underground or on structure, it will also be expensive. Also, public transit service to the area will be upgraded as another element of the entire South Boston urban development area infrastructure. Urban density, limited parking and better public transit service all contribute to an environment that is conducive to transit use for the trip to and from work. The travel demand analysis for these projects recognizes this and develops a transit and highway plan supportive of demand forecasts.

The final step in the analysis evaluated impacts of the projects on each element of the transportation system and identified measures necessary to mitigate any adverse transportation impacts.

It should be noted that the traffic analysis was conducted assuming that only the Third Harbor Tunnel/ Seaport Access Road elements of the I-90/I-93 project will be in place by the 1995 analysis year. The Depressed Central Artery portion of the I-90/I-93 project was not included because current construction timetables indicate all elements of the Artery will not be completed until three years after the 1995 analysis year.

The highway network represents a realistic condition for the 1995 analysis year and reflects EOTC's expected construction timetables. The Seaport Access Road and Third Harbor Tunnel provide direct connection to and from the project area with two proposed interchanges. Travel to the projects from the Massachusetts Turnpike, Southeast Expressway and Logan Airport/North Shore can occur entirely on new limited-access highways as a result of this construction program. Impacts on local

streets are thus minimized. While the Depressed Central Artery is a key element in the Commonwealth's Transportation Master Plan, the Fan Pier/Pier 4 Project area is well served with the Seaport Access Road/Third Harbor Tunnel.

DESCRIPTION OF THE ENVIRONMENT

The transportation system in the vicinity of the study area is highly developed, consisting of regional highways, arterial and local streets, commuter and local bus routes, rapid transit services, and commuter rail and boat services.

STREET SYSTEM

Access/Circulation

The street system in South Boston and adjacent sections of Downtown consists of both local and arterial streets and limited access highways. Regional routes serving the area include:

- The Central Artery - the major north-south roadway through Downtown. It is a limited access highway located at the western edge of the study area, providing access to I-93, the Tobin Bridge (Route 1 to I-95) and Storrow Drive; the Southeast Expressway; and the Massachusetts Turnpike Extension.
- Southeast Expressway - a limited access highway providing the major route to the south. It is the continuation of the Central Artery south of the Dewey Square Tunnel.
- Massachusetts Turnpike Extension - a limited access highway providing the major route to the west. It terminates at the Southeast Expressway/Central Artery at the western boundary of the study area.
- Morrissey Boulevard - a major arterial roadway extending south from Columbia Road providing an alternative route to the Southeast Expressway and southern suburbs.

Major roadways providing access to the site across the Fort Point Channel from Downtown and throughout the entire area include:

- Northern Avenue - provides direct access to the site and is a major connection across the Fort Point Channel between South Boston and Downtown (at

Atlantic Avenue). In South Boston, it provides access to Commonwealth Pier 5 (World Trade Center), Fish Pier 6 and the Boston Marine Industrial Park.

- Summer Street - another major connection between Downtown (at South Station) and South Boston.
- Congress Street - the third connection across the Fort Point Channel providing access to the western part of South Boston from Downtown.
- L Street/W.J. Day Boulevard - an important South Boston collector street also currently providing a commuter route between the site (and Downtown) and the Southeast Expressway and Morrissey Boulevard at Columbia Road. L Street represents the continuation of Summer Street from the vicinity of the Reserved Channel south to Day Boulevard.
- D Street - another South Boston street which currently serves as a commuter route for traffic to the south. It runs from Summer Street just east of the Viaduct to Dorchester Avenue.
- A Street - a South Boston street which provides commuter access to the Southeast Expressway via West Fourth Street and to the Massachusetts Turnpike Extension via the West Broadway Bridge.

A more detailed description of the street system is provided in the Appendix.

Existing Traffic Volumes

Mechanical and manual traffic counts were taken in March and April, 1985, and were supplemented with additional traffic volume data from the Central Transportation Planning Staff to form a 1985 base traffic flow network. Table 2 lists, for several locations, the 1985 average weekday daily traffic (AWDT), AM and PM peak hour traffic volumes, and the percent of daily traffic volume which the AM and PM peak hour traffic volumes represent. Existing daily volumes are also shown in Figure 2. Among the locations shown in Table 2, average daily traffic volumes along major routes range from a low of 8,300 vehicles per day on D Street to a high of 30,350 vehicles per day on the Summer Street Bridge.

TABLE 2
1985 Traffic Volume Summary

Location	1985 AWDT*	AM Peak Hour (vph)**	Percent of AWDT	PM Peak Hour (vph)	Percent of AWDT
Northern Avenue Bridge	17,700	1,520	8.6%	2,290	12.9%
Sleeper Street	5,400	310	5.7%	610	11.3%
Congress Street Bridge	10,500***	1,100	10.6%	780	7.5%
Summer Street Bridge	30,350	2,360	7.8%	2,110	7.0%
Broadway Bridge	29,950	2,050	6.8%	2,300	7.7%
West Fourth Street Bridge	12,200	950	7.8%	940	7.7%
Reserved Channel Bridge	17,750	1,580	8.9%	1,330	7.5%
D Street north of Cypher Street	8,300	750	9.0%	600	7.2%
East Broadway at L Street	11,900	640	5.4%	740	6.2%
W.J. Day Boulevard at I Street	21,400	1,510	7.1%	1,730	8.1%
Old Colony Avenue at D Street	25,900	2,480	9.6%	2,320	9.0%
Dorchester Avenue at Damrell Street	13,850	1,050	7.6%	1,180	8.5%

* AWDT - average weekday daily traffic.
** vph - vehicles per hour.
*** Estimate based on 1981 count.

FIGURE 2
Existing
Average
Weekday Daily
Traffic

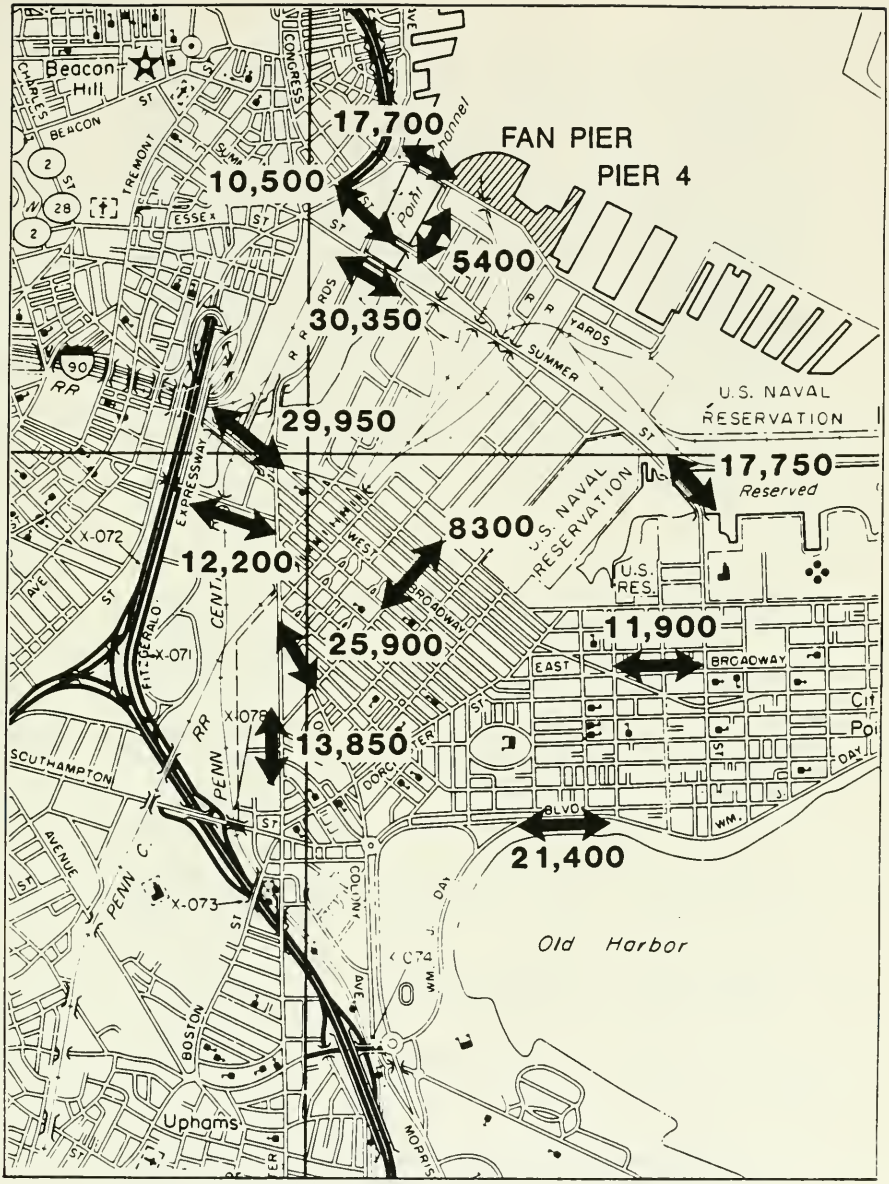


Table 3 shows peak hour directional distribution for various two-way roadways in the study area. The table lists the locations and the percent of the peak hour traffic in the dominant direction of flow. The highest directional flow is on Northern Avenue at Atlantic Avenue where 88 percent of the evening peak hour traffic is westbound (toward downtown). As shown earlier in Table 2, this roadway also has the highest percentage of daily traffic in the evening peak hour. L Street at East Broadway has the highest directional traffic flow in the AM peak hour, with 86 percent of the traffic in the northbound direction. The same location also shows high directionality in the evening peak hour, with 74 percent of the peak hour volume moving southbound. In contrast, West Broadway at Dorchester Avenue has evenly balanced directional distribution with only 51 percent westbound in the morning and 53 percent eastbound in the evening.

TABLE 3
Peak Hour Directional Distribution

Location	AM Peak Hour	PM Peak Hour
Northern Avenue at Atlantic Avenue	55% Eastbound	88% Westbound
Summer Street at D Street	62% Westbound	56% Eastbound
West Broadway at Dorchester Avenue	51% Westbound	53% Eastbound
Dorchester Avenue at Old Colony Avenue	68% Northbound	64% Southbound
W.J. Day Boulevard at L Street	78% Eastbound	69% Westbound
L Street at East Broadway	86% Northbound	74% Southbound

The peak hour directional distribution generally reflects travel toward Downtown in the morning and travel away from Downtown in the evening. A variation in this pattern is along Northern Avenue at Atlantic Avenue. Large commuter parking lots located on the Fan Pier and along Sleeper Street attract trips across the Fort Point Channel in the morning and generate trips in the opposite direction in the evening. A Central Artery northbound off-ramp on Atlantic Avenue south of Northern

Avenue and an on-ramp north of Northern Avenue reinforce this pattern.

Existing Levels of Service

Figures 3 and 4 show 1985 peak hour turning movements at the analysis intersections in the study area. Turning movement counts shown for the AM and PM peak hour are an important element in determining roadway operating conditions because they enable the analyst to assess the vehicle conflicts expected at intersections. These traffic volumes were analyzed to determine existing conditions and form the base upon which future traffic conditions are projected. Levels of service at each study location were calculated and are presented in Table 4. The procedure and criteria used for determining levels of service are described in the Appendix. Three key terms used in the table to describe operating conditions are defined below:

Level of Service. Level of service (LOS) is used to denote intersection operating conditions and is represented on a scale ranging from "A" at the highest level to "F" at the lowest level. Levels of Service "A" through "D" are generally considered acceptable while Levels "E" and "F" are not. At Level of Service "A" drivers experience little delay and intersections operate under free-flow conditions. Levels of Service "B" through "D" represent increasing amounts of delay and increasing numbers of vehicles which are stopped and may have to wait through more than one red signal. At Level of Service "E" the intersection is approaching capacity and processing the maximum number of vehicles possible. Long backups and queues of vehicles occur and many vehicles wait through more than one light cycle. Level of Service "F" results from volumes in excess of capacity and is characterized by jammed conditions. The increased volume results in forced-flow, stop and go traffic with intolerable congestion and delay.

Volume-to-Capacity Ratio. Volume-to-capacity (V/C) ratio is a term that is used to quantify the level of service ranges. It compares the volume actually being processed through an intersection to the theoretical maximum capacity of the location. If the volume exactly matches the capacity, the V/C ratio is 1.00 which falls at the upper end of LOS "E". If the volume is less than capacity, the V/C ratio is less than 1.00. If the volume is greater than capacity, the V/C ratio is greater than 1.00. The latter condition occurs when more traffic wants to pass through a location than can be handled by it, thereby resulting in the congestion and delay associated with LOS "F". Each LOS range is

FIGURE 3
Existing AM
Peak Hour
Volumes

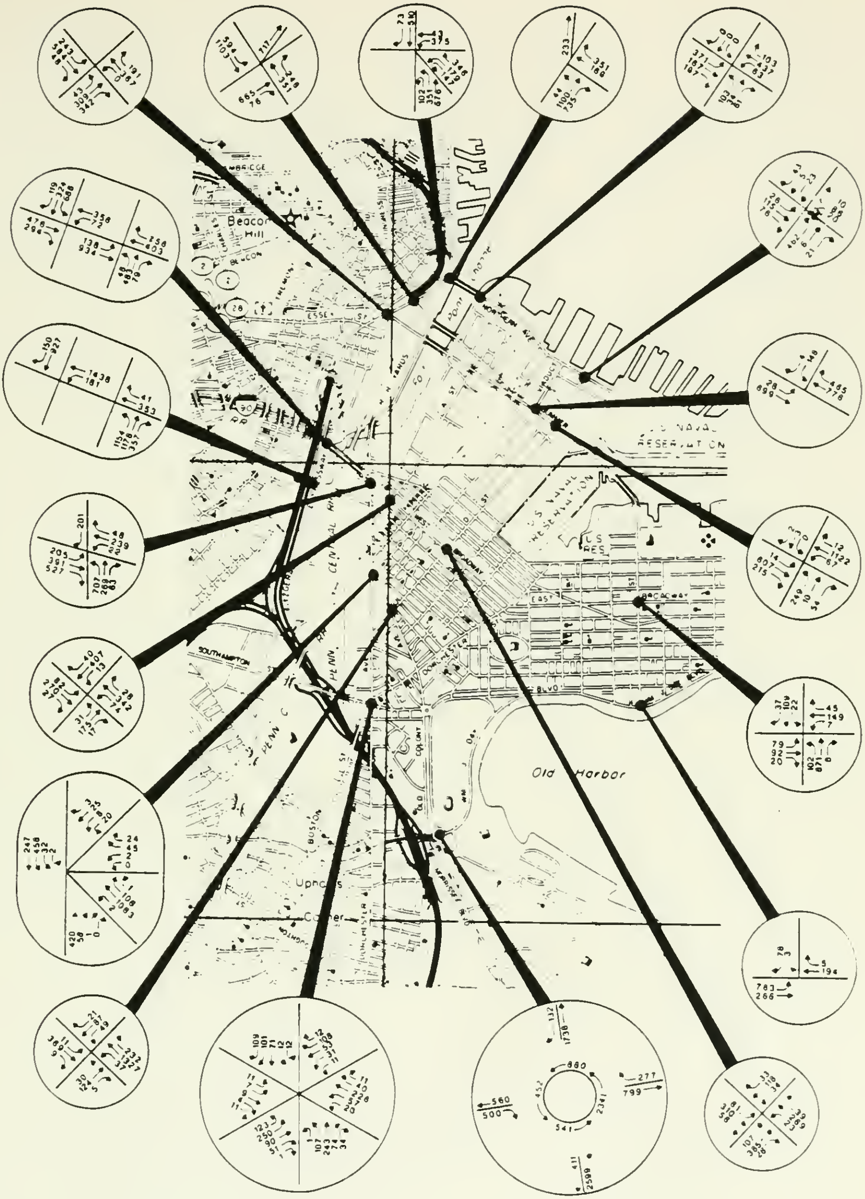
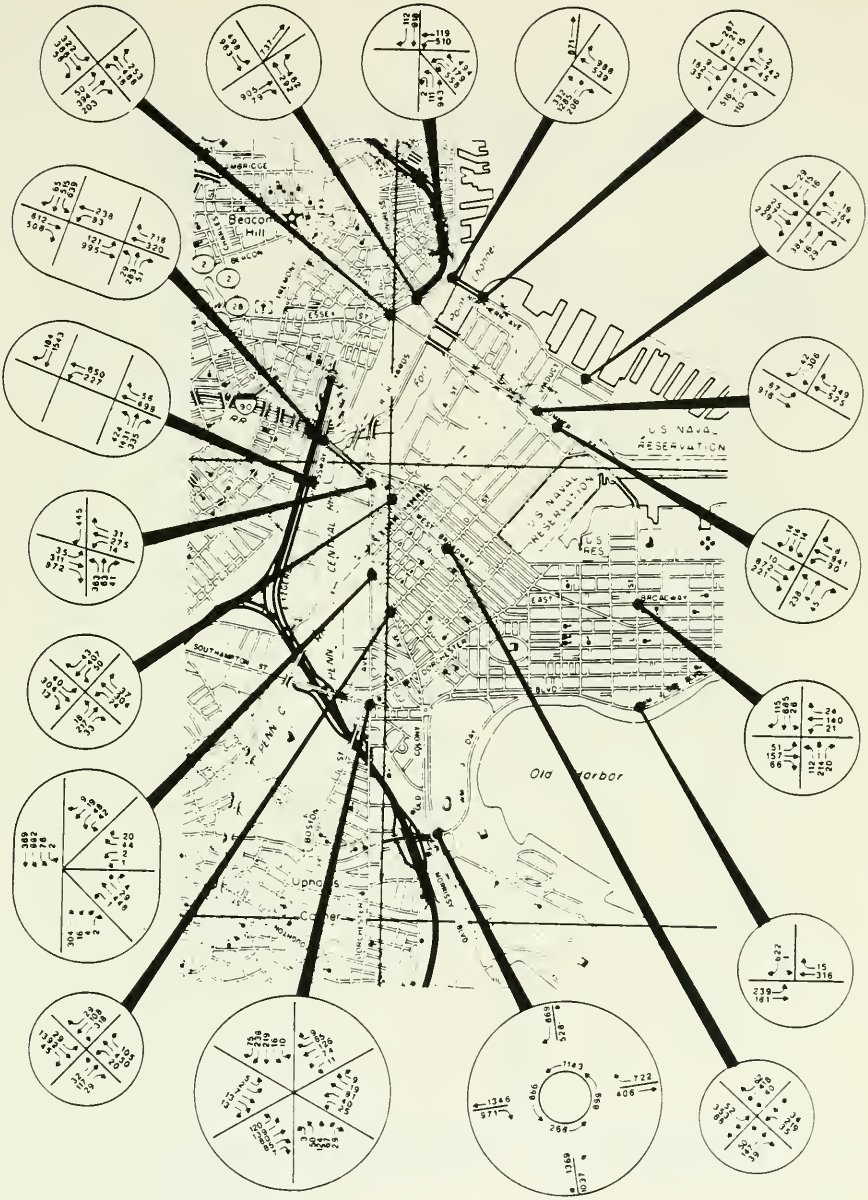


FIGURE 4
Existing PM
Peak Hour
Volumes



denoted by a V/C ratio range with the lower ratios denoting the better levels of service. The specific ranges associated with each LOS are given in the Appendix.

TABLE 4
Existing Levels of Service

Location	AM Peak Hour V/C*	AM Peak Hour LOS**	PM Peak Hour V/C	PM Peak Hour LOS
East Broadway/L Street	0.53	A	0.49	A
West Broadway/D Street	0.64	B	0.67	B
Old Colony Avenue/D Street	0.67	B	0.82	D
West Broadway/A Street	0.65	B	0.60	A
West Fourth Street/Frontage Road	0.74	C	0.68	B
East Berkeley Street/Albany Street	0.76	C	0.64	B
Herald Street/Albany Street	0.55	A	0.69	B
Summer Street/Viaduct	0.53	A	0.46	A
Summer Street/Atlantic Avenue	0.93	E	0.94	E
Northern Avenue/Atlantic Avenue***	0.61	B	0.91	E
Congress Street/Atlantic Avenue	0.83	D	0.88	D
Broadway Bridge/Frontage Road	0.75	C	0.60	A
Summer Street/D Street	0.66	B	0.62	B
Andrew Square	0.71	C	0.52	A
High Street/Atlantic Avenue	0.75	C	0.90	D
Old Colony Avenue/Dorchester Avenue	0.57	A	0.44	A
West Broadway/Dorchester Avenue	0.86	D	0.70	B
Northern Avenue/Ramp Street	149	D	143	D
Day Boulevard/L Street	352	B	251	C
Northern Avenue/Sleeper Street	242	C	0	E
Kosciuszko (Columbia) Circle	1.03	F	1.05	F

* Volume-to-capacity ratio (available reserve capacity for unsignalized intersections).

** Level of service.

*** Analyzed as a signalized intersection (even though it is not) due to operating characteristics of this location during peak hour conditions.

Available Reserve Capacity. Available reserve capacity (ARC) is a special term associated with unsignalized intersections. For these facilities, the major roadway

is assumed to have the right-of-way and each individual movement on the side street (right, left, or through) is analyzed for its maximum capacity based on approach volumes on the major roadway. The actual volume being processed for each movement is compared to its calculated capacity. The difference between capacity and actual demand is defined as the available reserve capacity and is used as the criterion for determining level of service. Each LOS is associated with a range of ARC values, as shown in the Appendix. The higher the ARC, the better the LOS. The ARC and LOS values attached to an unsignalized intersection normally apply to the most critical movement at that location, i.e., the one with the least amount of reserve capacity.

In the morning peak hour, two locations are operating near or at capacity. One location is the intersection of Summer Street and Atlantic Avenue which is operating at Level of Service "E" with a volume-to-capacity ratio of 0.93. The other location is the rotary at Kosciuszko Circle which is operating at a volume-to-capacity ratio of 1.03 for the northbound traffic along Morrissey Boulevard which forms a queue waiting to enter the rotary.

In the evening peak hour, these intersections operate at similar levels of service as in the morning peak hour. In addition, two other intersections also operate at Level of Service "E". These are the intersection of Northern Avenue and Atlantic Avenue and the intersection of Northern Avenue and Sleeper Street. Both are currently unsignalized intersections. One other location, High Street at Atlantic Avenue, is at the borderline between Levels "D" and "E".

The level of service calculation for Northern Avenue and Sleeper Street represents conditions for side street traffic trying to cross or enter the Northern Avenue flow. However, the level of service calculation for Northern Avenue and Atlantic Avenue was done as if the intersection were signalized. This is because the stop-sign control on Northern Avenue is ineffective during periods of heavy traffic. As a result, the conflicting flows of Northern Avenue traffic entering the northbound Central Artery ramp alternate crossing the intersection with Atlantic Avenue traffic. Queues form along both Atlantic Avenue and Northern Avenue. The signalized level of service analysis is the technique which produces results most closely representing the actual operating characteristics of the intersection.

Truck Traffic

Truck traffic using certain South Boston streets exists largely as a result of industrial uses located in the northern section. Table 5 shows truck traffic as a percent of approach traffic at several major intersections. Truck traffic tends to be heaviest in the morning peak hour. Several roadways with intersection approaches carrying more than 10 percent trucks in the morning include: Broadway, D Street, A Street, L Street, and Northern Avenue. In the evening, only D Street eastbound at Old Colony Avenue carries more than 10 percent trucks. Because of the negative impact of heavy truck volumes on intersection capacity, adjustments in level of service calculations were made for every intersection with any approach having more than 5 percent trucks.

Vehicle Speeds/Travel Times

Travel speeds provide a measure of performance that can be used to assess the effectiveness of streets to accommodate traffic volumes. Speed measurements were taken by a standard traffic engineering procedure called the "Floating Car Method." Travel speeds and delays along several key commuter routes in South Boston were measured by means of an observation car traveling in the traffic stream at a speed consistent with the flow of vehicles at any given time. Table 6 indicates the results, showing average speeds which were recorded in the peak direction on these roadways and which are representative of overall travel speeds. Spot speeds at specific points along the route may be higher or lower depending upon localized conditions.

The results of the corridor average travel speed study indicate that the A Street, L Street, and West Broadway corridors all experienced overall speeds less than 15 mph during peak periods. Average travel speeds lower than 15 mph were also observed on D Street during the afternoon peak period (3:30 PM to 6:00 PM). On the remaining streets, observed speeds were generally low, varying from 15 to 28 mph.

TABLE 5
Existing Truck Traffic Percentages at Selected Locations

Intersection and Approach	Percent Trucks	
	AM Peak Hour	PM Peak Hour
D Street/Summer Street		
D Street Eastbound	19	6
Summer Street Southbound	9	6
Summer Street Northbound	3	6
D Street/Old Colony Avenue		
Old Colony Northbound	2	5
Old Colony Southbound	4	3
D Street Eastbound	7	13
D Street Westbound	14	4
A Street/Broadway		
A Street Northbound	17	4
A Street Southbound	8	3
Broadway Eastbound	13	7
Broadway Westbound	13	4
Northern Ave./Atlantic Ave.		
Atlantic Avenue Northbound	6	4
Northern Avenue Westbound	18	N/A*
L Street/Broadway		
L Street Northbound	2	5
L Street Southbound	11	2
Broadway Eastbound	8	7
Broadway Westbound	6	5
D Street/Broadway		
D Street Northbound	2	3
D Street Southbound	8	3
Broadway Eastbound	6	4
Broadway Westbound	5	9

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* Trucks not counted because of high volumes and lack of traffic control.

TABLE 6
Travel Speeds in Peak Direction

Roadway	AM Peak Hour (mph)*	PM Peak Hour (mph)
Summer Street	27	25
L Street	14	19
Congress Street	14	24
D Street	26	10
Northern Avenue	26	21**
West Broadway	12	14
A Street	13	6
Sleeper Street	17	17
Old Colony Avenue	28	11

* Average speed in the peak travel direction in miles per hour.

** Does not include delay at approach to Atlantic Avenue.

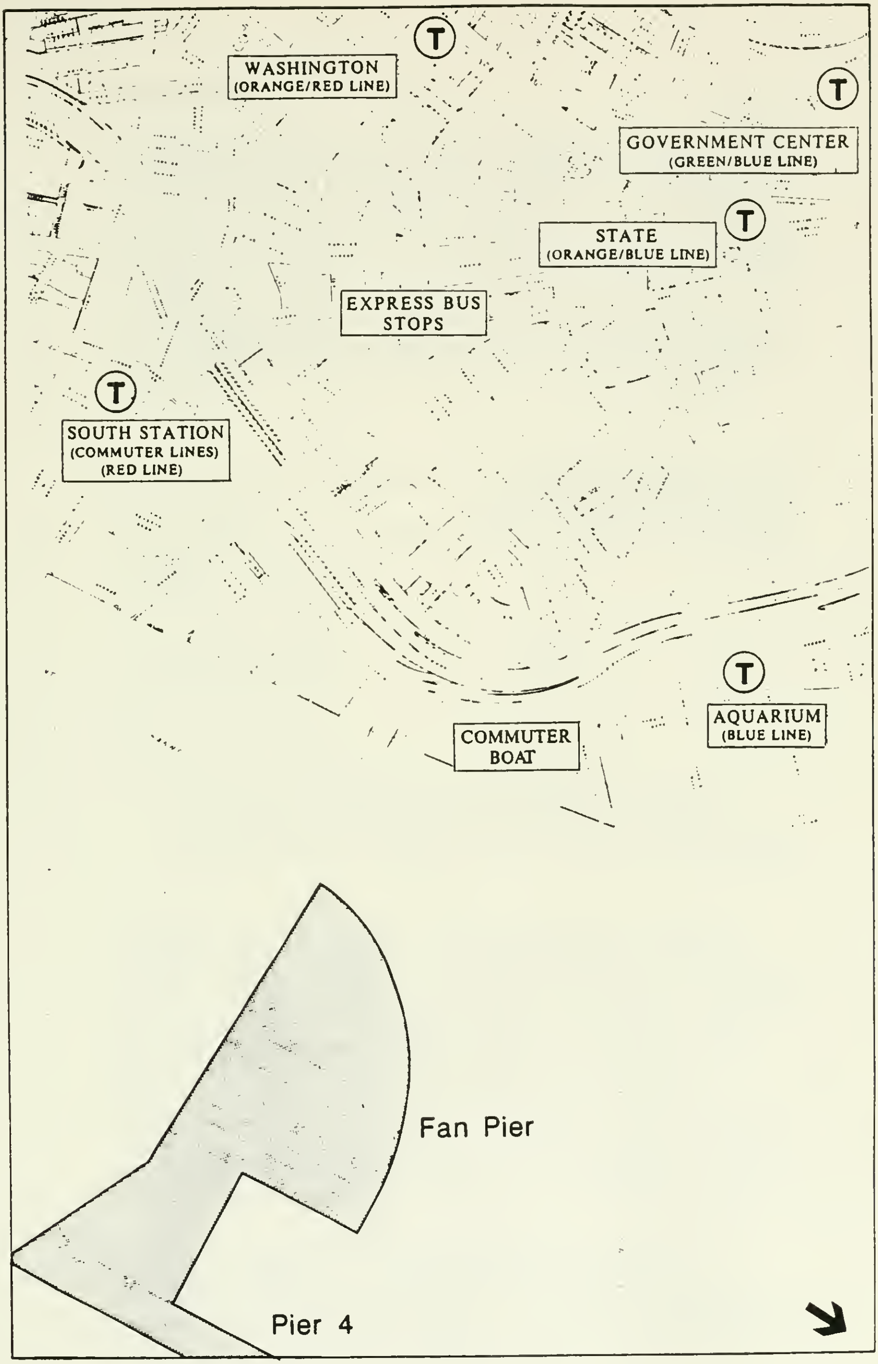
SOURCE: Field inventory for the Commonwealth Pier EIR, 1981. Traffic counts taken in 1981 and 1985 indicate little change in volumes and establish the validity of using the earlier data to represent existing conditions.

In addition to observing travel speeds, average travel times were recorded over selected alternative routes between the Fan Pier and Pier 4 sites and the Massachusetts Turnpike Extension and the Southeast Expressway. Average times and distances for five inbound routes from the south, for six outbound routes to the south, and for three outbound routes to the west were recorded and are reported in Table 10 of the Appendix. The routes studied include the major commuter routes through South Boston along L, D, and A Streets, and routes across the Fort Point Channel on Northern Avenue and Congress Street. These average travel times were considered in the assignment of future trips to the study area street system.

PUBLIC TRANSPORTATION SYSTEM

The sites of the proposed projects are accessible to public transportation. Figure 5 shows the existing facilities and services in the area. These include Red Line and Blue Line rapid transit, commuter rail, local and commuter bus, and commuter boat.

FIGURE 5
Public Transportation Facilities



Rapid Transit

Pedestrian access to rapid rail transit lines from the proposed projects will involve walking distances greater than one-half mile as shown in Table 7. A Red Line station is located at South Station, while the Blue Line Aquarium Station is located at State Street and Atlantic Avenue (at the Marriott Long Wharf). Currently, walking distances between the sites and both stations are approximately equal. However, with the relocation of the Northern Avenue bridge, walking distance to the Aquarium Station will be increased by approximately 500 feet.

TABLE 7
Walking Distances Between the Sites and Rapid Transit Stations

	Walking Distance (feet)	
Site Location	South Station	Aquarium*
Sleeper Street/ Old Northern Avenue	2,400	2,950
Pittsburgh Street/ Old Northern Avenue	3,100	3,650
Pier 4 Entrance/ Old Northern Avenue	4,100	4,650

* Distances to the Aquarium Station are via the relocated Northern Avenue bridge and are approximately 500 feet longer than via the existing bridge.

The Red Line runs from Alewife Station in Cambridge through Downtown Boston to Andrew Station in South Boston. South of Andrew Station, the route divides with one branch terminating at Ashmont in Dorchester and the other going to Quincy and Braintree. Major commuter parking garages are provided at Alewife, Quincy Center, Quincy Adams (junction of Routes 3 and 128) and Braintree, while smaller parking lots are provided at North Quincy and Wollaston. Transfer points on the Red Line occur at the two stations north of South Station. Washington is the transfer point to the Orange Line, and Park Street is the transfer point to the Green Line.

The Blue Line runs from Wonderland in Revere on the north to Bowdoin just west of Government Center. Transfer points are at the two stops west of Aquarium. Orange Line transfers are made at State Street and Green Line transfers are made at Government Center.

In Table 8, rapid transit line capacities are calculated from the car capacities used by the MBTA for planning purposes, even though heavier passenger loads are often observed on the system. This conservative estimate of capacity shows that currently, despite a shortage of rolling stock, Red Line trains running through South Station can accommodate about 11,500 passengers in each direction in the peak hour. Trains through State Street Station on the Orange Line can carry 9,300 passengers in each direction. The Green Line can accommodate about 7,500 passengers on all branches combined west of Park Street, while the Blue Line can handle 6,600 riders. It should be noted that in preparing this Final EIR, a detailed study of Red Line and Green Line operations was conducted in the fall of 1986 and capacities for those lines are based upon actual operating conditions.

TABLE 8
Existing
Rapid Transit
Line Capacity
Peak Hour
Peak
Direction

Line/Segment	Average Cars/ Train	Average Headway* (minutes)	Average No. of Trains	Car Capacity**	Line Capacity
Red Line/North Ashmont-Alewife Braintree-Alewife	4	4	15	180	10,800***
Red Line/South Alewife-Ashmont Alewife-Braintree Park-Quincy	4	3.75	16	180	11,520
Green Line/West Boston College Cleveland Circle Riverside Huntington Avenue	1.6****	1.67	36	130	7,500
Green Line/North Lechmere Service	1.33****	4	15	130	2,600
Orange Line/North-South Oak Grove-Forest Hills	4	4	15	155	9,300
Blue Line Bowdoin-Wonderland	4	4	15	110	6,600

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* Red and Green Line headways are based on observed system performance in fall 1986. Orange and Blue Line headways are based on schedules obtained from the MBTA.

** The MBTA uses these capacity estimates for planning purposes. Heavier loads can be carried and are often observed on the system.

*** Capacity is slightly lower than Red Line/South because the Quincy-Park run is not included.

**** Represents one-car trains on the Huntington Avenue Line and a mix of one and two-car trains on all other lines.

The MBTA periodically counts in-vehicle passengers at certain peak load point stations. On the Red Line, for example, the peak load points are Andrew and Charles. On the Blue Line, Aquarium is the peak load point. Table 9 compares current ridership with current capacity.

It should be noted that peak hour ridership does not generally occur uniformly over the peak hour. Instead, there may be surges over short periods of time. In such cases, trains become overcrowded, and some passengers are forced to wait for another train.

Another factor which affects the capacity of the system is equipment reliability . The Red and Green Lines have suffered from equipment malfunctions over the past several years. Such malfunctions disrupt the schedule of service and reduce system throughput. The result is lower effective capacity than would be available under operations not suffering such disruptions. For this reason, the Red and Green Line capacities shown in Tables 8 and 9 are based not on schedules but on actual system performance in fall, 1986. The planned improvements described later in this section should increase system reliability dramatically. They include longer trains and platforms, more cars, renovation of the existing vehicle fleet, track and signal reconstruction. The effect will be more consistent achievement of the scheduled system capacity.

Local Bus Service

The MBTA currently operates two bus routes which directly serve the proposed project sites. These are Route 6, Army Base-Haymarket and South Station (via Northern Avenue), and Route 7, City Point-Downtown (via Northern Avenue). Figure 6 shows these routes within the study area. Both routes provide service between the project sites and South Station where there are connections to the Red Line, Commuter Rail and private commuter buses. Route 6 also stops at the Aquarium Blue Line Station and Haymarket Station with connections to the Orange and Green Lines and North Shore express buses.

TABLE 9
Existing
Rapid Transit
Ridership
PM Peak Hour
Outbound

Line/Segment	Peak Station	Existing Ridership*	Line Capacity for Each Direction**
Red Line/North Ashmont-Alewife Braintree-Alewife	Charles	7,140	10,800
Red Line/South Alewife-Ashmont Alewife-Braintree Park-Quincy	Andrew	11,190	11,520
Green Line/West Cleveland Circle Boston College Riverside Huntington Avenue	Arlington	10,000	7,500
Green Line/North Lechmere Service	Science Park	1,100	2,600
Orange Line/North Forest Hills-Oak Grove	North Station	10,270	9,300
Orange Line/South Oak Grove-Forest Hills	Essex	7,080	9,300
Blue Line/North Bowdoin-Wonderland	Aquarium	6,120	6,600

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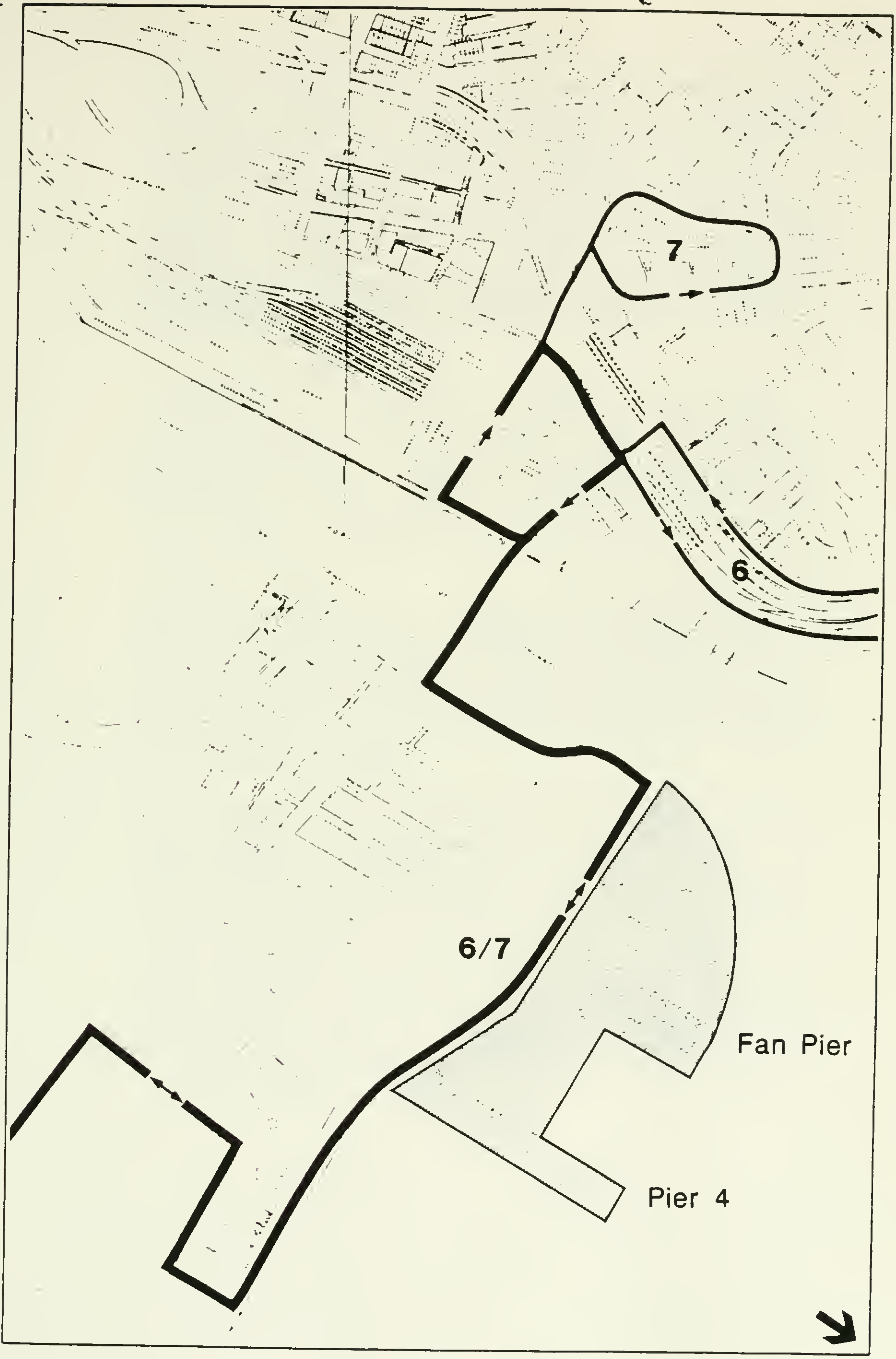
* Red Line and Green Line/West ridership figures are based on independent observations in fall 1986; other ridership figures are based on 1984 MBTA counts.

** See preceding table.

FIGURE 6
Local MTBA
Bus Routes 6
and 7 in
Vicinity of
Projects



Route 6 operates only during weekday peak periods, with buses scheduled at 15-minute intervals. Service to and from Haymarket Station is provided only at half-hour intervals. Route 7 operates on weekdays between the hours of 5:15 AM and 10:15 PM. During peak hours, scheduled headways average 12 minutes in the morning and 14 minutes during the afternoon. Based on the published schedules for Routes 6 and 7, a total of nine buses per direction serve the site along Northern Avenue during the morning peak hour, while eight serve the sites during the evening peak hour.

The typical bus used on Routes 6 and 7 has a seating capacity of 46 passengers. Its normal carrying capacity is 60 passengers, although greater loads can be accommodated under crush conditions. Based on the scheduled headways and normal capacities, 660 passengers can be accommodated in each direction in the morning peak hour, while 540 can be handled in the evening.

Ridership information for early 1985 was provided by the MBTA for Routes 6 and 7. These data are summarized in Table 10, which shows peak passenger bus loads. The peak passenger load point information was collected at the intersection of Congress Street and Dorchester Avenue. On both routes, the heavier flows are outbound from South Station in the morning and inbound to South Station in the evening.

The busiest hour of the day for Route 6 is 7:00-8:00 AM, when outbound passengers total 199 or 83 percent of normal capacity. For Route 7, the morning peak hour is 8:00-9:00 AM, when 194 outbound passengers (65 percent of normal capacity) are carried. Because both routes serve industrial areas, peak loading in the evening occurs between 3:00 and 4:00 PM, when 69 percent of each route's normal inbound capacity is utilized. Between 4:00 and 5:00 PM, Route 6 and 7 inbound capacities are respectively 44 percent and 58 percent utilized; between 5:00 and 6:00 PM, utilization rates are, respectively, 36 percent and 17 percent.

TABLE 10
Local Bus Capacity and Ridership*

Direction/ Time Period	Route 6		Route 7		Total	
	Capacity	Passengers	Capacity	Passengers	Capacity	Passengers
Outbound from South Station						
6:00-7:00 AM	240	167	120	61	360	228
7:00-8:00 AM	240	199	300	169	540	368
8:00-9:00 AM	240	123	300	194	540	317
Total	720	489	720	424	1,440	913
Inbound to South Station						
3:00-4:00 PM	240	166	240	165	480	331
4:00-5:00 PM	240	106	240	138	480	244
5:00-6:00 PM	240	86	240	40	480	126
Total	720	358	720	343	1,440	701

* Peak passenger loadings at Congress Street and Dorchester Avenue.

NOTE: Typical bus seating capacity is 46 passengers. Normal capacity (used for peak hour planning) is 60 passengers.

SOURCE: Massachusetts Bay Transportation Authority passenger counts for February 26, May 1 and May 17, 1985.

Commuter Express Bus Service

Five MBTA commuter express bus routes operate from the Downtown financial district to suburban communities west of Boston. The buses operate along the Massachusetts Turnpike and stop at the corner of Franklin and Federal Streets. This location, approximately 3,600 feet from the proposed Fan Pier offices and 4,600 feet from Pier 4, is linked to both sites by Bus Route 7. As shown in Table 11, 52 express buses are scheduled to arrive Downtown between 7:30 and 8:30 AM. In the evening, 46 buses are scheduled to depart between 4:30 and 5:30 PM. The MBTA uses the same planning capacity figure for express buses as for local buses, i.e., 60 passengers per bus. Therefore, the peak hour morning inbound capacity of the express buses is 3,120 and the peak hour evening outbound capacity is 2,760. Ridership during the PM peak hour is about 2,520 or 91 percent of capacity.

TABLE 11
Commuter Bus Service to Financial District

Route Number	Name	Number of Buses* AM Peak	Number of Buses* PM Peak
300	Riverside	10	8
301	Brighton Center	10	9
304/304A	Newton Corner	14	14
305	Central Square Waltham	7	6
310**	Needham	11	9
Total	52	46	

* Arrivals between 7:30 and 8:30 AM and departures between 4:30 and 5:30 PM, as of fall, 1986.

** Arrivals and departures at Franklin and Devonshire Streets. This bus is to be phased out with the re-instatement of commuter rail service to Needham.

Several private operators, such as Plymouth and Brockton and Brush Hill lines, provide commuter bus service to South Station. These lines generally serve the South Shore. The MBTA provides commuter bus service from the north to Haymarket Station, while private bus operators, such as Hudson Bus Line, also provide service to the Haymarket area.

Commuter Rail

The MBTA's commuter rail trains operate from North Station and South Station. The system is comprised of eight branches, four of which terminate at South Station (Framingham, Franklin, Attleboro and Stoughton). The South Station terminal is within walking distance of the proposed project sites or can be reached via Bus Route 6 or 7. North Station can be reached by taking Route 6 or 7 to the Red Line and transferring at Washington to the Orange Line, or by taking Route 6 to Haymarket and walking one-quarter mile. Table 12 summarizes the capacity and ridership of the commuter rail service.

TABLE 12
Summary of Existing Commuter Rail Service

	Number of Trains		Peak Period Seating Capacity*		Peak Period Ridership**	
Branch	AM	PM	AM	PM	AM	PM
Framingham	4	4	2,300	1,700	2,210	1,815
Franklin	5	4	2,800	2,400	3,000	2,505
Attleboro	5	5	2,800	3,300	2,935	2,640
Stoughton	4	3	2,200	1,500	2,070	1,170
Rockport/ Ipswich	6	6	2,300	2,300	2,530	2,140
Haverhill/ Reading	6	5	2,400	2,000	1,825	1,440
Lowell	6	6	1,700	1,600	1,100	1,140
Gardner/ Fitchburg	4	4	1,300	1,200	1,230	1,045

* Seating capacity is based on 100 seats per car.
** Represents winter 1984 data.

SOURCE: MBTA Commuter Rail Section.

As can be seen from the table, overall peak period ridership on the commuter rail system generally does not exceed the seating capacity. However, there are instances where standees exist on various train trips. When the number of standees on a particular train regularly approximates 50, consideration is given to adding a car, if feasible.

Commuter Boat

An increasingly important part of the public transportation system serving Downtown Boston is the commuter boat service. Although it carries fewer passengers than other forms of transportation, there has been increased emphasis on improving the service and ridership has been building dramatically.

Commuter boat service to Downtown is provided from Hull (50 minutes), Hingham (30 minutes), and Quincy (25 minutes). A total of 11 boat trips operate during morning and evening peak commuter periods and can accommodate almost 1,600 passengers. All vessels have full weather protection. Hingham and Quincy trips dock at Rowes Wharf; the Hull boat docks at Long Wharf. Specific capacity and ridership information is provided in Table 13.

TABLE 13
Peak Period*
Commuter
Boat Service

From	To	Trips	Capacity	Ridership
Hingham	Rowes Wharf	8	1,019	575
Hull	Long Wharf	1	300	100-200**
Quincy	Rowes Wharf	2	278	50-65
		11	1,597	725-840

* 6:00 AM - 9:30 AM and 3:15 PM - 7:30 PM.
** Highly seasonal

The commuter boat dock at Rowes Wharf is located within walking distance of the Fan Pier and Pier 4 Projects and, with the exception of local bus service, is the closest of all the public transportation facilities serving the sites. An improved docking facility will be incorporated within the Rowes Wharf Development which is currently under construction. With the increased emphasis being placed on this mode at the state level, there is potential for a significant increase in usage.

EXISTING PARKING

The Fan Pier site currently serves as a surface parking lot used by daily commuters working in Downtown Boston. This lot has proved to be attractive to Downtown workers because, at $3.50 per day, it is considerably less expensive than Downtown parking. The practical capacity of the lot is approximately 2,000 vehicles. In June and

July of 1985, daily usage averaged approximately 1,125 vehicles. This is down almost 25 percent from a daily average of 1,470 in June and July of 1984 when the fee was only $2.00 per day. Peak hour counts taken in June 1985 indicate that almost 510 vehicles entered the lot in the morning peak hour. In the evening peak hour, almost 440 vehicles exited from the lot.

Table 14 shows the directional distribution of the peak hour entering and exiting vehicles. The majority of the commuters access the surface lot from Atlantic Avenue.

TABLE 14
Directional Distribution of Fan Pier Parkers

	AM	PM
Location	Entering Vehicles Percent From	Exiting Vehicles Percent To
Atlantic Avenue-West	73	70
Sleeper Street-South	7	5
Ramp Street-East	20	25

In addition to using the Fan Pier lot, daily commuters also park on the "Cabot, Cabot & Forbes" parcel on the south side of Northern Avenue. On-street parking is available along Northern Avenue and is used extensively by tour buses, especially those associated with the Children's Museum. Finally, about 650 spaces are located on Pier 4. These spaces are restricted to use by patrons of Anthony's Pier 4 Restaurant.

ASSUMED FUTURE TRANSPORTATION SYSTEM

Several changes to the area's transportation system are expected to be constructed or implemented by the 1995 analysis year. The changes listed below will affect travel to and from the project sites and have been included in the No-Build and Build analyses.

PLANNED ROADWAY IMPROVEMENTS

- Relocated Northern Avenue Bridge and New Northern Avenue - The existing Northern Avenue Bridge across the Fort Point Channel will be replaced with a new structure several hundred feet south of the existing structure. A new Northern Avenue will be built between the new span and B Street, parallel to the existing Northern Avenue. Figure 7 shows the proposed bridge and street location. Construction

FIGURE 7
Relocated (New) Northern Avenue With Future Links to Seaport Access Road

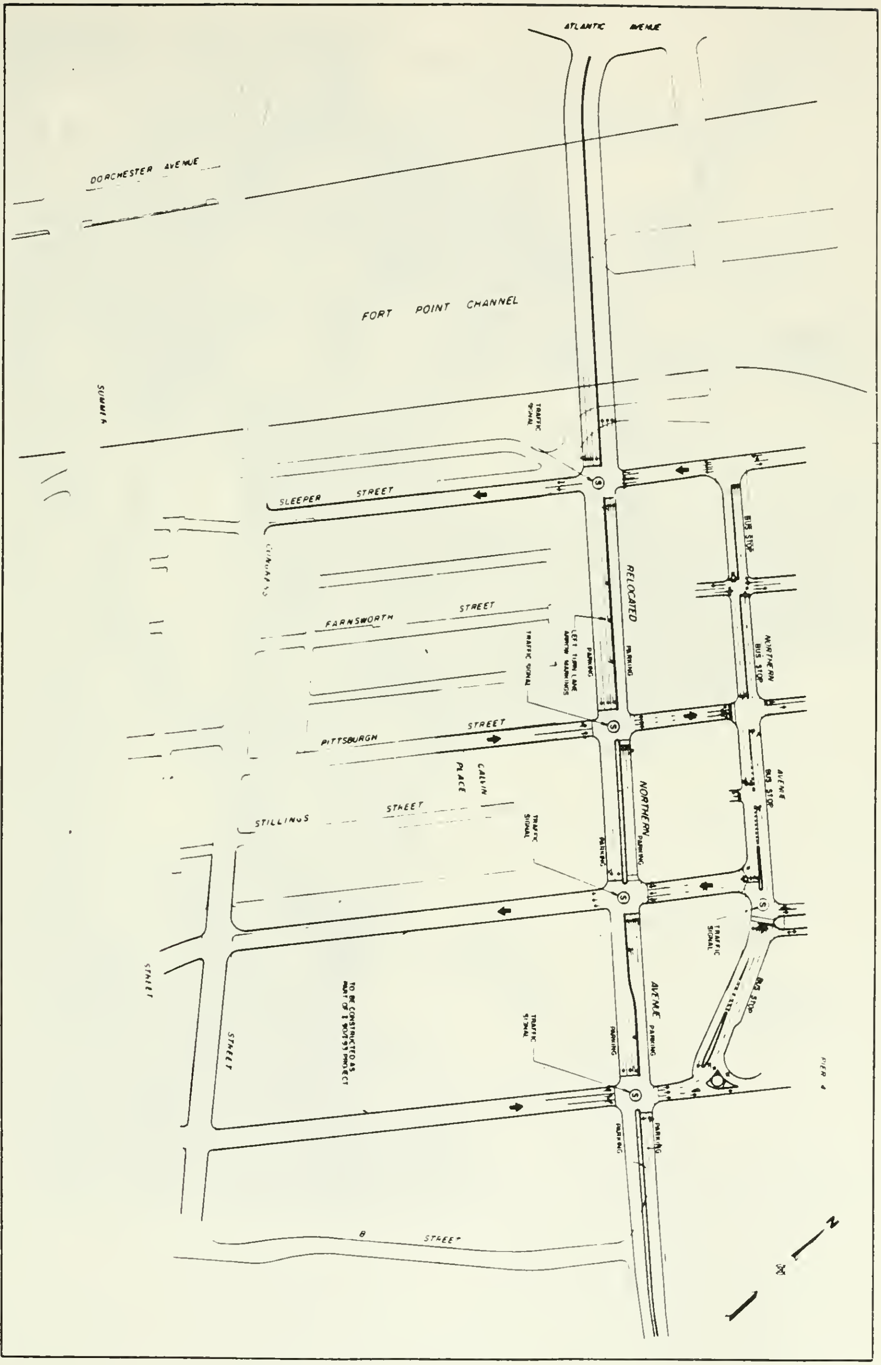
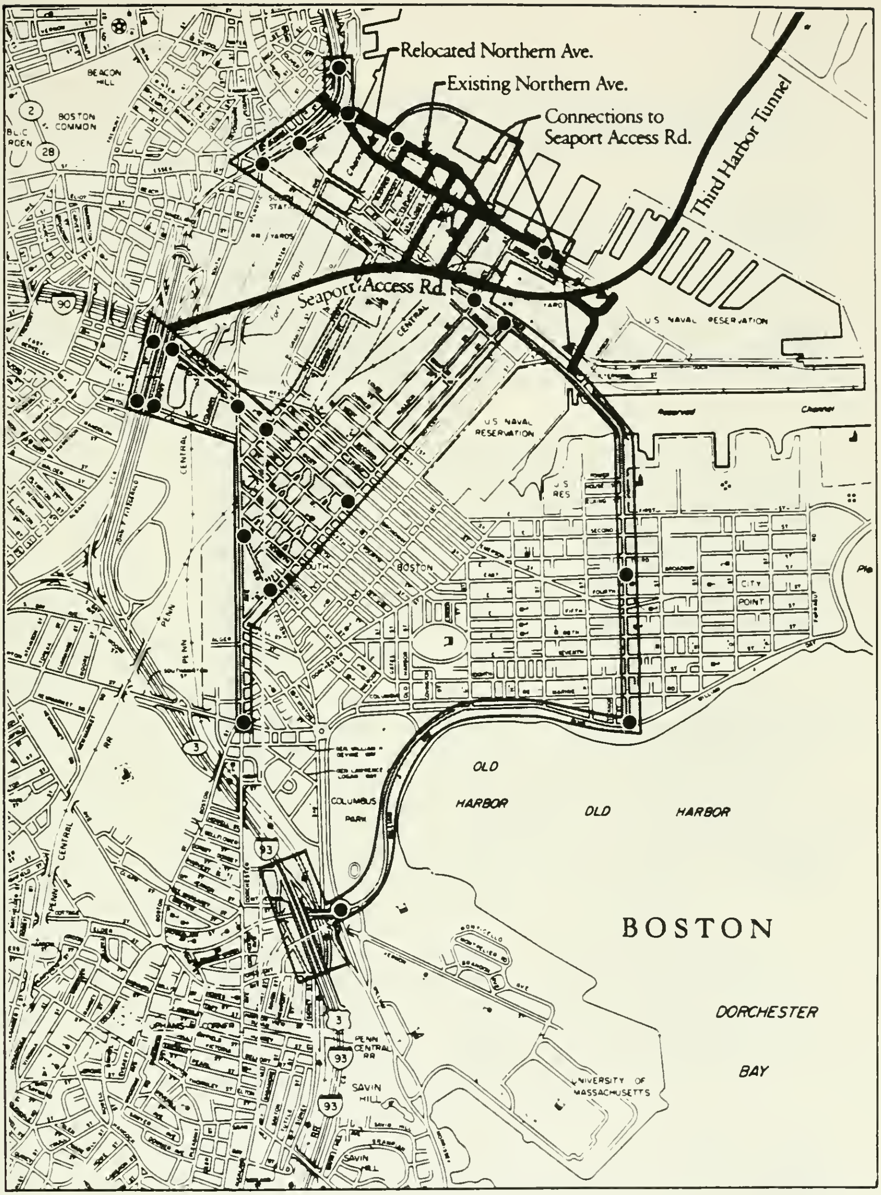


FIGURE 8
Future Network With Seaport Access Road/ Third Harbor Tunnel Portions of I-90/I-93 Project



is expected to begin in 1987 and be completed by 1990. This project is the responsibility of the Massachusetts Department of Public Works (MDPW).

- Local Grid Street System - Connections between the old and new Northern Avenue are planned at Sleeper Street, Pittsburg Street, Pier 4, and a location between Pittsburg Street and Pier 4, as shown in Figure 7. Included in this project is the reconstruction of the existing Northern Avenue. Design work is expected to be completed by 1988. The MDPW will have responsibility for construction which will be completed by 1990.

- Congress Street and Summer Street Bridge Rehabilitation - The bridges across the Fort Point Channel will be repaired to eliminate current weight restrictions which restrict their full utilization by heavy vehicles. The design of both bridges is currently underway and is the responsibility of the City of Boston. Construction will be the responsibility of the MDPW and is expected to be completed by March of 1990.

- North Area/Central Artery Project - The existing Central Artery Bridge over the Charles River and its connections to I-93, Route 1 and the Tobin Bridge will be reconstructed to relieve a severe safety problem and capacity bottleneck. A multi-level, fully-directional interchange will be provided. The Massachusetts Departments of Public Works indicates that construction is scheduled to being in mid-1987 and should take three years to complete.

- Day Boulevard Improvements - The Metropolitan District Commission (MDC), which has jurisdiction over Day Boulevard, has plans to install traffic signals at several locations along the Boulevard. Only one of these signals will be located west of L Street (at Columbus Park) along the section of roadway used by daily commuters.

- Third Harbor Tunnel and Seaport Access Road - This project involves construction of a new Third Harbor Tunnel under Boston harbor to Logan Airport and the regional highway system north of the Airport, and construction of a connecting roadway, called the Seaport Access Road, through South Boston between the current terminus of the Massachusetts Turnpike at I-93 and the new Third Harbor Tunnel. The Seaport Access Roadway will have ramp connections to the South Boston street network. Figure 8 shows the future South Boston street network with the proposed

Seaport Access Road and Third Harbor Tunnel. This project is part of the larger I-90/I-93 project, which also includes the Depression of the Central Artery. The I-90/I-93 project is currently under design by the Central Artery Team. The current construction schedule calls for the completion of the Seaport Access Road and Third Harbor Tunnel in 1994. The northbound Central Artery is expected to be open in 1995 and the southbound Artery in 1996. Completion of all ramp connections to the Central Artery and removal of the existing structure are expected in 1998.

The 1995 transportation analysis for the Fan Pier and Pier 4 developments assumed the completion of the Seaport Access Road and Third Harbor Tunnel. The depression of the Central Artery was not included and, therefore, the existing ramp connections and Artery configuration were included in the roadway network.

PLANNED PUBLIC TRANSPORTATION IMPROVEMENTS

The most significant public transportation improvements planned which will affect service to the proposed projects are the development of the Transportation Center at South Station and the upgrading of service on the Red, Orange and Green Lines. The rehabilitation and expansion of South Station, which are currently underway, will result in a centralized location for many transportation services. Included will be Amtrak; MBTA Commuter Rail; commuter and intercity bus service; direct connections within the Station area to the Red Line; parking for 500 cars initially, with planned expansion to 2,000 spaces; and direct ramp connections to the South Bay interchange serving the Southeast Expressway, the Massachusetts Turnpike Extension, the Central Artery and, ultimately, the Seaport Access Road and Third Harbor Tunnel. The result will be a major intermodal transportation center located within walking distance of the sites and connected to them by two local MBTA bus routes (Routes 6 and 7).

The MBTA is making major capacity and reliability improvements to the Orange, Red, and Green Lines. These improvements include the following:

o The Southwest Corridor Project - This project, which is nearing completion, involves the expansion of Orange Line trains from four to six cars and the relocation of the southern portion of the line to a

new right-of-way. The segment involved is approximately 4.7 miles in length and includes eight new stations. This project is scheduled for opening in early 1987.

- Station Expansion - Three older Orange Line Stations and seven Red Line stations, including South Station, will be modernized and expanded. When the work is completed in 1988, the Red and Orange Lines will accommodate six-car trains instead of the current maximum of four cars. As a result, a 50 percent increase in capacity is possible if current schedules are maintained. In fact, the MBTA is planning 50 percent and 33 percent increases in scheduled capacity on the Red and Orange Lines, respectively.

- Power System Upgrade - The Green Line power system will be enhanced to propel three-car trains instead of the current two-car maximum.

- Acquisition of New Cars - Between 1986 and 1989, the MBTA will put 58 new Red Line cars and 100 new Green Line cars into service.

- Renovation of Existing Cars -- The renovation of all 76 Silverbird cars in the Red Line fleet is now underway. Renovation should be completed and all cars returned to service by 1989. The Red Line's 88-car Bluebird fleet was recently rebuilt so that by 1989 the entire Red Line fleet will be newly renovated or newly acquired.

- Track Reconstruction -- In May 1985, a construction project to replace the entire Red Line track structure from Harvard Station to Charles Street was begun. This project should be complete in 1987, when the next phase of reconstruction between Charles Street and Andrew Station will begin. Extensive Green Line track work was completed in 1986.

All these projects are forecast to be completed well in advance of the 1995 Build year for the Fan Pier and Pier 4 Projects. As a result of these improvements, the Red, Orange, and Green Lines will have increased capacity and greater reliability.

PROBABLE PROJECT IMPACTS

In order to assess the probable impacts of the proposed Fan Pier and Pier 4 Developments on the area's transportation system, it is necessary to project travel demands from the proposed projects as well as from other likely 1995 developments in the area. The new demands must be added to existing base conditions in order to derive a projection of future conditions.

TRAVEL DEMANDS

Trip Generation

To assess the impact of the proposed Fan Pier and Pier 4 Developments, separate travel demand estimates by land use and type of trip (work and non-work) were made. This approach uses daily person-trip generation rates for office, retail, and hotel uses for both trip types. Mode split factors, peak hour factors, and vehicle occupancy rates were then applied to the daily person-trip rates to obtain peak hour vehicle-trip and transit-trip generation rates. The assumptions for office, retail, and hotel were developed from multiple sources, including the Boston CBD Parking Study; recent EIRs prepared for major projects in Downtown Boston; 1980 Journey-to-Work Census data for South Boston; and surveys of the Marriott Long Wharf Hotel and the Holiday Inn on Cambridge Street in Boston. Residential trip generation rates were obtained from a survey of Harbor Towers, a Downtown waterfront residential development. The Appendix provides a detailed listing of vehicle-trip and transit-trip generation rates and an explanation of the trip generation assumptions used to project Fan Pier and Pier 4 travel demands.

The analysis of travel behavior patterns, and in particular the choice of mode, was carried out with an understanding that 1995 conditions in South Boston will be conducive to transit serving as the primary means of travel to and from work. This applies to the Fan Pier and Pier 4 Projects as well as nearby background development in South Boston. These conditions include: an urban environment and development density that is related to that of Downtown Boston today; the projects proximity to Downtown which, in effect, makes the project area an extension of Downtown Boston; a parking supply that is limited and a daily parking cost that will be expensive and equivalent to Downtown rates; and most important of all, an extensive public transit network. This network consists of: direct express bus service to suburban locations and frequent shuttle bus service to South Station, both operating on exclusive high-occupancy vehicle (HOV) lanes on the Seaport Access

Road; frequent shuttle bus service to MBTA transit facilities in Downtown Boston; and water transportation routes providing direct links to such locations as Long Wharf, North Station, Logan Airport, and the South Shore. All of these services are expected to be in operation by 1995. Beyond that time frame, as additional development occurs, it is expected that transit service operating on exclusive rights-of-way will be constructed to provide high speed direct access to the MBTA regional system.

The proposed projects are mixed-use developments consisting of office, retail, hotel, and residential uses. The proposed development programs were shown earlier in Table 1. Travel demand characteristics detailed in the Appendix were applied to these program elements to calculate vehicle-trip and transit-trip demands, which are shown in Table 15.

TABLE 15
1995 Project Travel Demands

	Vehicle-Trips			Person Trips on Transit		
Time	Fan Pier	Pier 4	Total	Fan Pier	Pier 4	Total
Daily						
In	5,317	2,930	8,247	8,530	3,330	11,860
Out	5,317	2,930	8 247	8,530	3,330	11,860
Total	10,634	5,860	16,494	17,060	6,660	23,720
AM Peak Hour						
In	857	442	1,299	2,444	950	3,394
Out	265	142	407	261	156	417
Total	1,122	584	1,706	2,705	1,106	3,811
PM Peak Hour						
In	383	197	580	417	214	631
Out	974	518	1,492	2,598	1,015	3,613
Total	1,357	715	2,072	3,015	1,229	4,244

NOTE: Vehicle-trip volumes include delivery vehicles and taxis as well as private automobiles. Transit-trip volumes include rapid transit, commuter bus, commuter rail and commuter boat trips.

The proposed developments would generate approximately 16,500 vehicle-trips daily and 23,700 transit-trips daily. During the morning peak hour, vehicular volume is expected to be 1,700, or 10.3 percent of the daily total. The evening peak hour vehicle volume is projected to be approximately 2,070, or 12.6 percent of the daily total. For public transportation, the morning

peak hour volume is projected to be 3,810 person-trips, or 16.1 percent of the daily total, while the evening volume would be approximately 4,240, or 17.9 percent of the daily transit total.

In the morning peak hour, approximately 76 percent of the projected vehicle-trips are expected to be inbound toward the project sites, while in the evening, approximately 72 percent of the trips will be outbound leaving the project sites. For public transportation, 89 percent of the morning trips and 85 percent of the evening trips will be in the peak direction.

Table 16 shows the breakdown of daily, morning peak hour and evening peak hour person trips by mode. On a daily basis, 43 percent of project trips are expected to be made by transit, 47 percent by automobile and 10 percent by walking. In the peak hours, the transit use percentages are projected to be higher than for daily conditions, while automobile and walk percentages will be lower. In the morning peak hour the transit percentage is expected to be 55 percent while in the evening peak hour it is expected to be 52 percent. Automobile trips will account for 41 percent and 42 percent, respectively, of morning and evening peak hour trips.

TABLE 16
1995 Person Trips
By Mode

Time/Project	Auto	Transit	Walk	Total
Daily				
Fan Pier	16,617	17,060	3,594	37,271
Pier 4	9,184	6,660	1,698	17,542
Total	25,801	23,720	5,292	54,813
Percent	47%	43%	10%	100%
AM Peak Hour				
Fan Pier	1,853	2,705	190	4,748
Pier 4	963	1,106	91	2,160
Total	2,816	3,811	281	6,908
Percent	41%	55%	4%	100%
PM Peak Hour				
Fan Pier	2,219	3,015	323	5,557
Pier 4	1,169	1,229	154	2,552
Total	3,388	4,244	477	8,109
Percent	42%	52%	6%	100%

Net Additional Peak Hour Vehicle Trips

The Fan Pier is currently used for long-term (all day) parking for daily commuters to Downtown Boston. This parking will be eliminated under the proposed development plan and, as discussed in the Parking Impacts section, no new comparably-priced alternative parking for these commuters is likely to be available with assumed 1995 developments in place. As a result, traffic associated with this activity will be removed from area roadways with the development of the Fan Pier.

In order to determine the net impact of the proposed developments, the traffic volumes associated with the existing use have been subtracted from the future Build volumes. A similar procedure was utilized in determining background traffic generated by the CC&F development parcel that is currently used for parking south of Northern Avenue. However, to be conservative, this was done only for intersections close to the project sites where the existing volumes are large enough to potentially affect the level of service analysis. As a result, Build volumes for intersections south of East and West Broadway are generally somewhat overstated because the existing parking traffic was not removed.

Delivery Vehicle and Taxi Trips

A certain amount of the total daily vehicle generation described above will consist of taxi and delivery vehicle trips. Delivery vehicles are typically single-unit, two-axle vans, not large semi-trucks. Table 17 summarizes the expected delivery vehicle traffic for the office, retail and hotel uses. Only minor amounts of delivery vehicle traffic would be associated with residential uses. Due to the proximity of the Fan Pier and Pier 4 Projects, the delivery vehicle rate was applied only to Fan Pier since it is likely multiple stops will be made by delivery vehicles.

TABLE 17
Daily Delivery Vehicle Arrivals

	Office	Retail	Hotel	Total
Generation Rates	0.21 arrivals/ 1,000 sq. ft.*	0.24 arrivals/ 1,000 sq. ft.*	0.13 arrivals/ room**	
	278	37	105	420

* Based on Copley Place EIR.

** Based on counts taken at the Marriott Long Wharf Hotel in May, 1985.

At 1995 Full Build, approximately 420 deliveries are expected daily at the proposed developments. The complex would average almost 47 delivery vehicles per hour assuming a constant distribution over a nine-hour day. This is conservatively high in that some deliveries will most likely occur at night. If it is further assumed that each delivery vehicle arrives and departs within the same hour, then a maximum of approximately 94 delivery-vehicle trips per hour would occur. This volume constitutes 5.5 percent of the total morning peak hour traffic volume and 4.5 percent of the evening peak hour traffic volume generated by both projects. By comparison, truck traffic currently comprises 18 percent of morning peak hour volumes along Northern Avenue.

As currently planned, service entrances to all structures except two will be provided via the Projects' internal street system and underground garages. The only exceptions would be Fan Pier Parcel A which would have a service entrance on Old Northern Avenue at the Seaport Access Road entrance and a Pier 4 truck entrance on Northern Avenue adjacent to the property line between Pier 4 and Fan Pier.

Total taxi traffic is summarized in Table 18. At Full Build, approximately 620 taxi arrivals per day are expected with more than one-half projected for the hotels and the remainder divided between office and retail uses. The entrances to the hotels will provide areas for picking up and discharging passengers, and taxi holding areas will be provided near the major office buildings. As an example, the Pier 4 entry court will have a long multi-purpose taxi holding area along its easternmost drive.

TABLE 18
Daily Taxi Arrivals

	Office	Retail	Hotel	Total
Generation Rates	0.75 arrivals/ 100 person-trips*	0.75 arrivals/ 100 person-trips*	0.325 arrivals/ room**	
1995 Full Build				
Fan Pier	134	45	262	441
Pier 4	58	23	94	175
Total	192	68	356	616

* Based on Highway Research Board, NCHRP Report No. 62, Urban Travel Patterns for Hospitals, Universities, Office Buildings and Capitols, 1969.

** Based on counts taken at the Marriott Long Wharf Hotel in May, 1985.

BACKGROUND TRAFFIC GROWTH

Areawide traffic growth is a function of other new development in the area. This growth can be projected by the application of a generalized growth factor or by the assessment of specific development proposals. For this analysis, a combination of both approaches was used. Although information was available about possible new development in both South Boston and Downtown Boston, the Downtown information was limited primarily to development expected through 1990. In order to account for Downtown development through 1995, the analysis year for Full-Build of the projects, an additional five percent growth in Downtown background volumes was added. This factor was based on the growth in person-trips between 1972 and 1982 reported in the 1982 Cordon Count for Downtown Boston (see Appendix for more detail).

The anticipated traffic from each background development in South Boston and Downtown was added to the base network volumes to determine the No-Build conditions. Completed traffic studies were available for many of the Downtown projects and provided detailed information on projected AM and PM peak hour volumes. In cases where such volumes were not available for Downtown developments, trip generation equations based upon sources documented in the Appendix were used to calculate background development traffic based on the proposed use and size of each development. For South Boston developments near the sites, Fan Pier and Pier 4 rates were used because these developments, like the Fan Pier and Pier 4, are expected to represent an expansion of the Downtown into South Boston. Fan Pier and Pier 4 rates were used for the Cabot, Cabot & Forbes parcels, Commonwealth Flats, Pier 6, and Commonwealth Pier. For industrial uses, rates from the Institute of Transportation Engineer's (ITE) publication Trip Generation were modified and used. The ITE industrial vehicle-trip rates were reduced to reflect the higher transit usage and vehicle occupancy rates expected in both South Boston and Downtown. The Appendix provides a listing of the expected daily and peak hour volumes for each background development.

TRIP DISTRIBUTION

Generated vehicle-trips from the Fan Pier and Pier 4 Projects and other background development were distributed over the projected roadway system. This distribution was based on data available from a license plate survey of vehicles parked on the Fan Pier and

Cabot, Cabot & Forbes parcels provided by the Central Transportation Planning Staff (CTPS). The survey was conducted in early 1985. Table 19 illustrates the directional distribution used. The distribution was compared with the distribution used for the International Place EIR and the distribution based on the 1982 Cordon Count to verify the appropriateness of its use. The Appendix provides more detailed information on the development of the project trip distribution and shows a comparison of the distribution used with the 1982 Cordon Count and International Place EIR distributions.

TABLE 19
Trip Distribution by Major Route

Major Route	Percent
Route 1 (Tobin Bridge)	11
Interstate 93 (North)	14
Route 3 (North)	6
Route 2	8
Massachusetts Turnpike (I-90)	15
Boston Street/Dorchester Avenue	2
Southeast Expressway/ Morrissey Boulevard	44
Total	100

SOURCE: CTPS license plate survey of cars parked on Fan Pier and CC&F parcels.

In addition to determining the distribution of traffic to major routes in and out of the City, consideration was also given to alternative local routings between these major highways and the sites. Of particular concern were the local South Boston streets which would be used by Southeast Expressway and Massachusetts Turnpike traffic.

Traffic from these highways can reach the site today via several routes through South Boston as well as from Downtown across the Fort Point Channel bridges. The various routes through South Boston include L Street/Day Boulevard; D Street/Old Colony Avenue; A Street/Dorchester Avenue/Old Colony Avenue; and A Street/West Broadway. Westbound and southbound traffic was assigned to these routes and to the relocated Northern Avenue,

Summer Street and Congress Street bridges across the Fort Point Channel (without mitigation measures which, in the future, tend to divert traffic off certain routes) based on a comparison of average peak hour travel times along these routes between the developments and the various access points to the Turnpike and the Expressway.

One final consideration with regard to assignment of trips to the network was the implementation schedule for the proposed Third Harbor Tunnel and Seaport Access Road. Current plans for the I-90/I-93 project include the full operation of the Third Harbor Tunnel and Seaport Access Road by 1994. The full operation of the Depressed Central Artery is not expected until 1998. Therefore, the distribution of Full Build development trips on area highways was based on a roadway network with the Third Harbor Tunnel and Seaport Access Road but without the Depressed Central Artery. The 1995 No-Build and Build conditions with the Third Harbor Tunnel and Seaport Access Road are shown in Figures 9 through 12.

ROADWAY IMPACTS

Introduction

The analysis of roadway impacts was conducted for 1995 Full Build with the Third Harbor Tunnel/Seaport Access Road portion of the I-90/I-93 project. The 1995 analysis scenario was based on Alternative 5A Modified of the Central Artery/Third Harbor Tunnel EIS. It includes the Harbor Tunnel itself and the Seaport Access Road through South Boston, but does not include the Depressed Central Artery through Downtown Boston. The depression of the Central Artery is strongly supported by the project developers and will be beneficial to the projects. However, it is not scheduled for full operation by the 1995 Build year for the Fan Pier and Pier 4 Projects. It should be noted that traffic impacts along the Seaport Access Road itself are not included, although its important junction points with the local road network in the project area are included.

Evening Peak Hour Volumes

Both the morning and evening peak hours were analyzed. However, throughout the Boston area, evening peak hour traffic volumes are generally the highest experienced during the day. Similarly, the highest volumes generated by Pier 4 and Fan Pier Developments would occur in the evening peak hour. To illustrate the impact of Fan Pier and Pier 4 traffic, Table 20 shows

FIGURE 9a
1995 AM
No-Build
Volumes

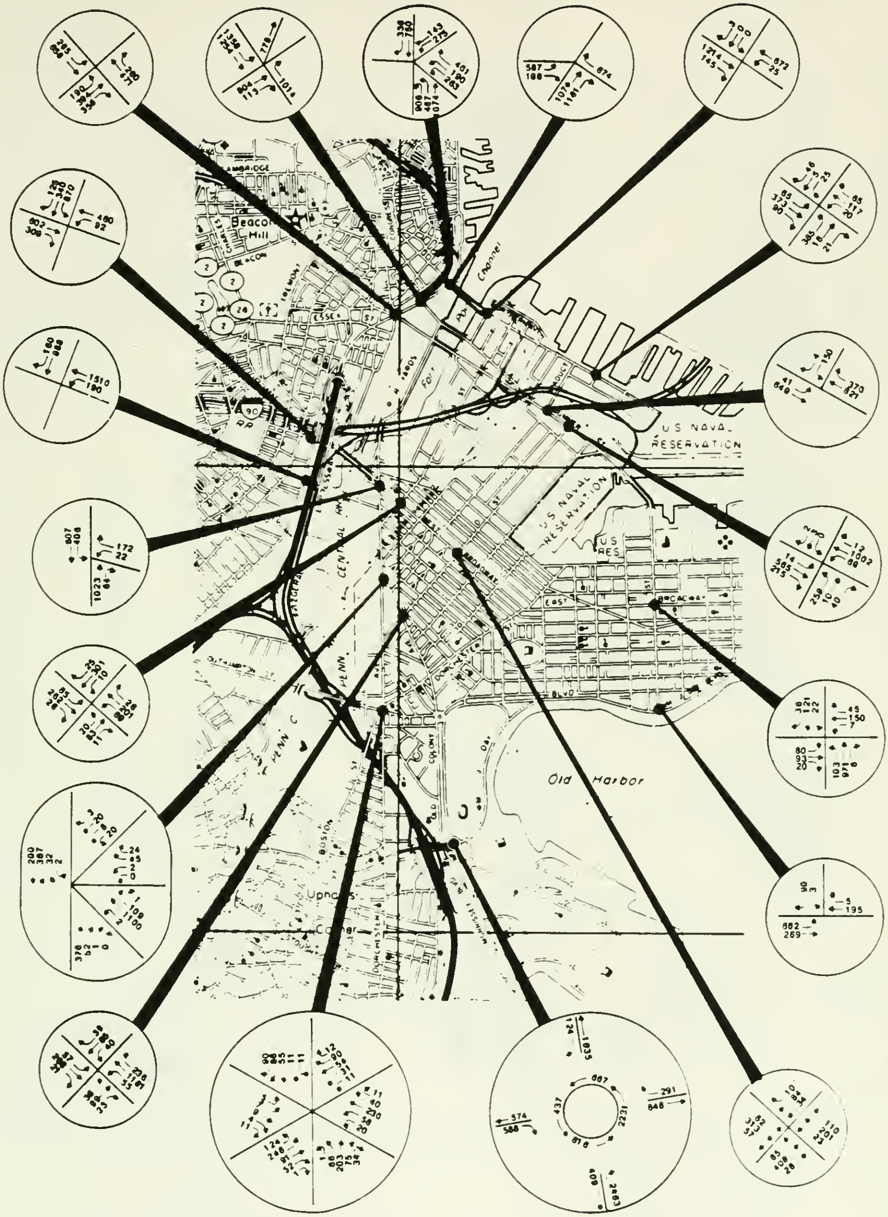


FIGURE 9b
1995 AM
No-Build
Volumes

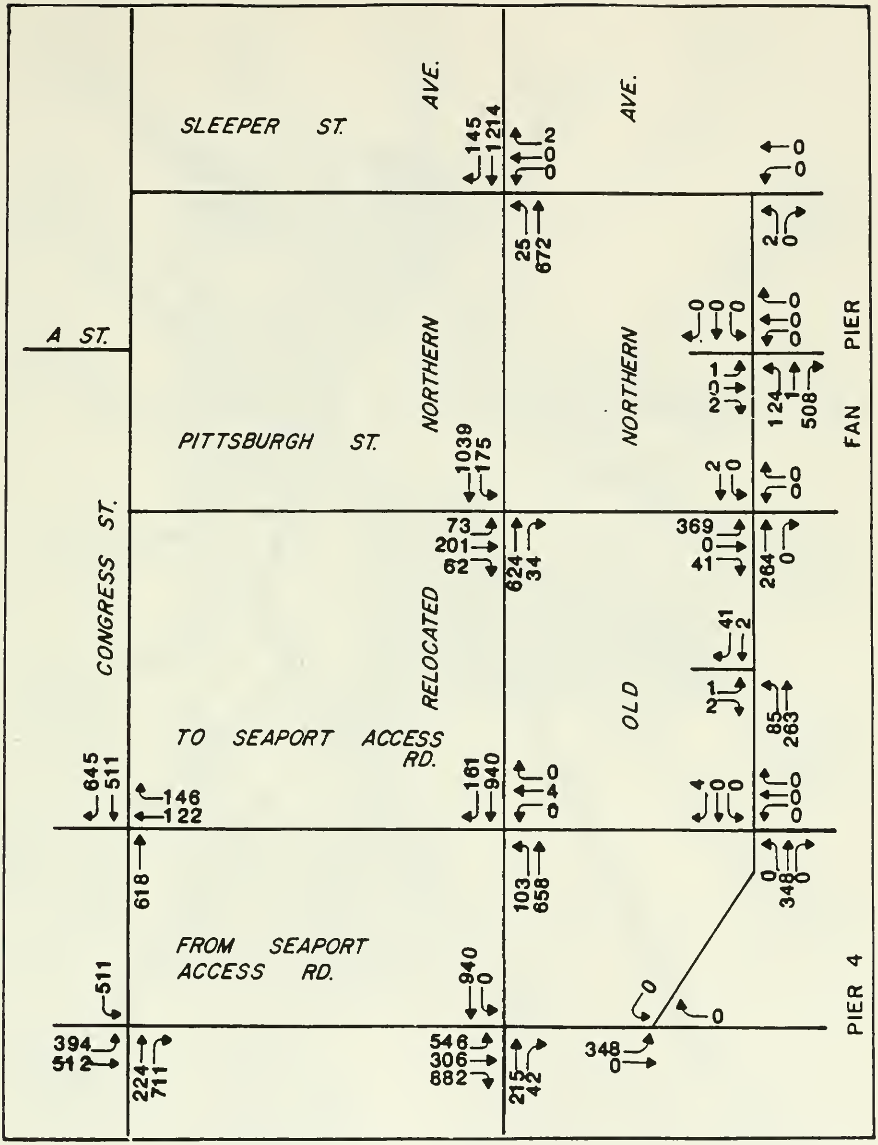


FIGURE 10a
1995 PM
No-Build
Volumes

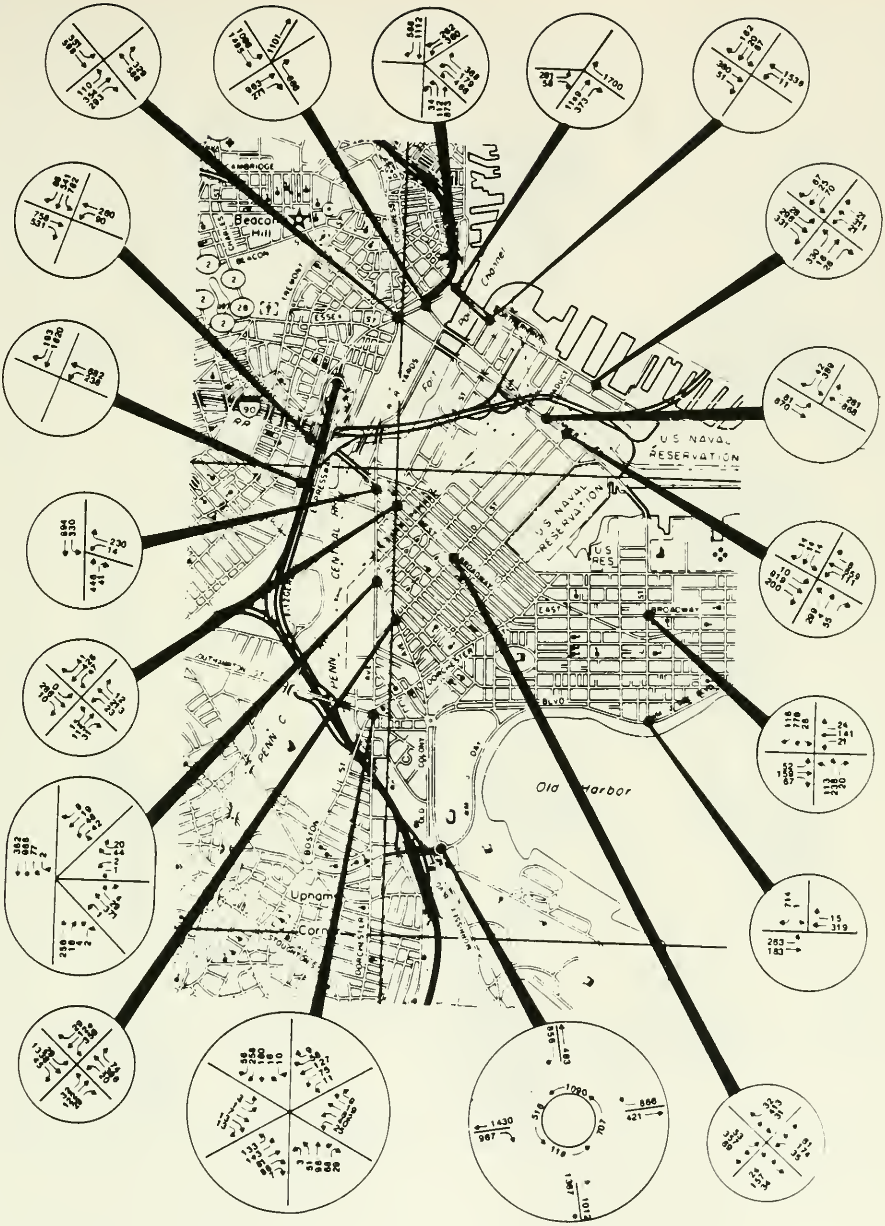


FIGURE 10b
1995 PM
No-Build
Volumes

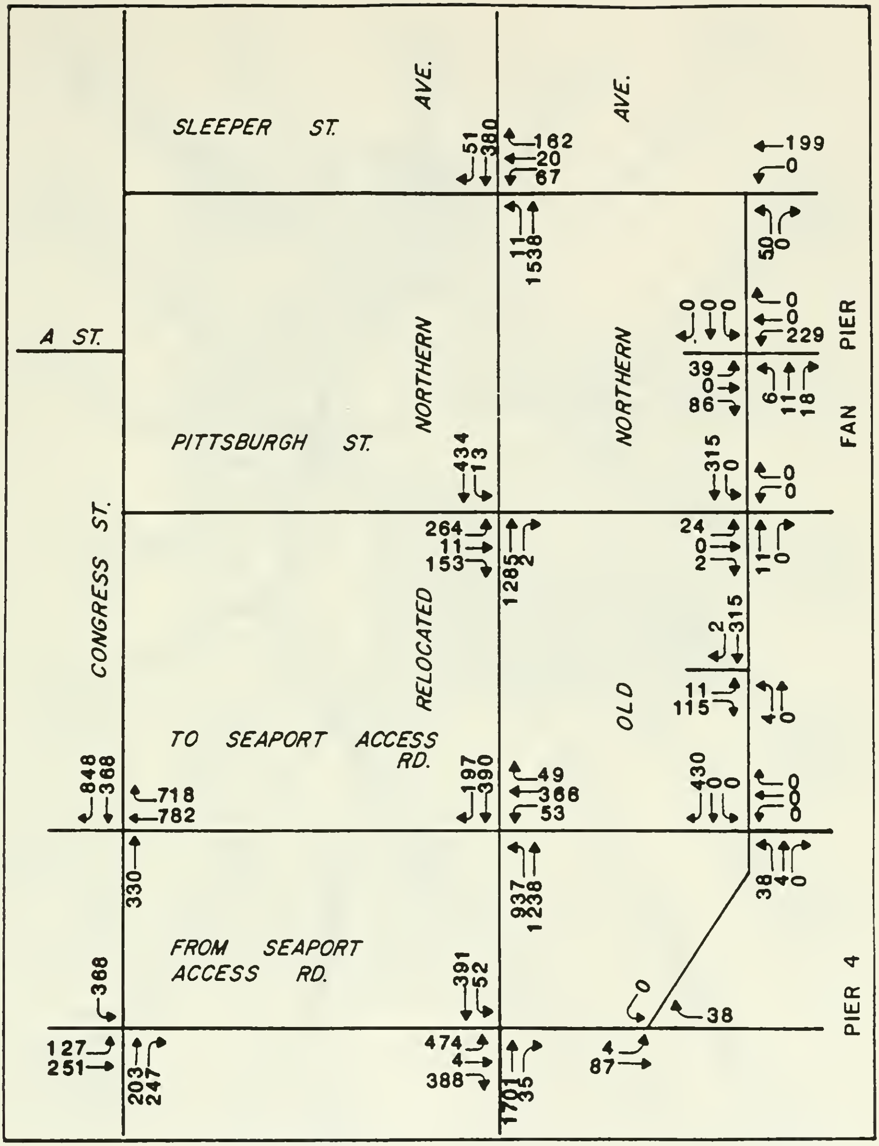


FIGURE 11a
1995 AM
Build
Volumes

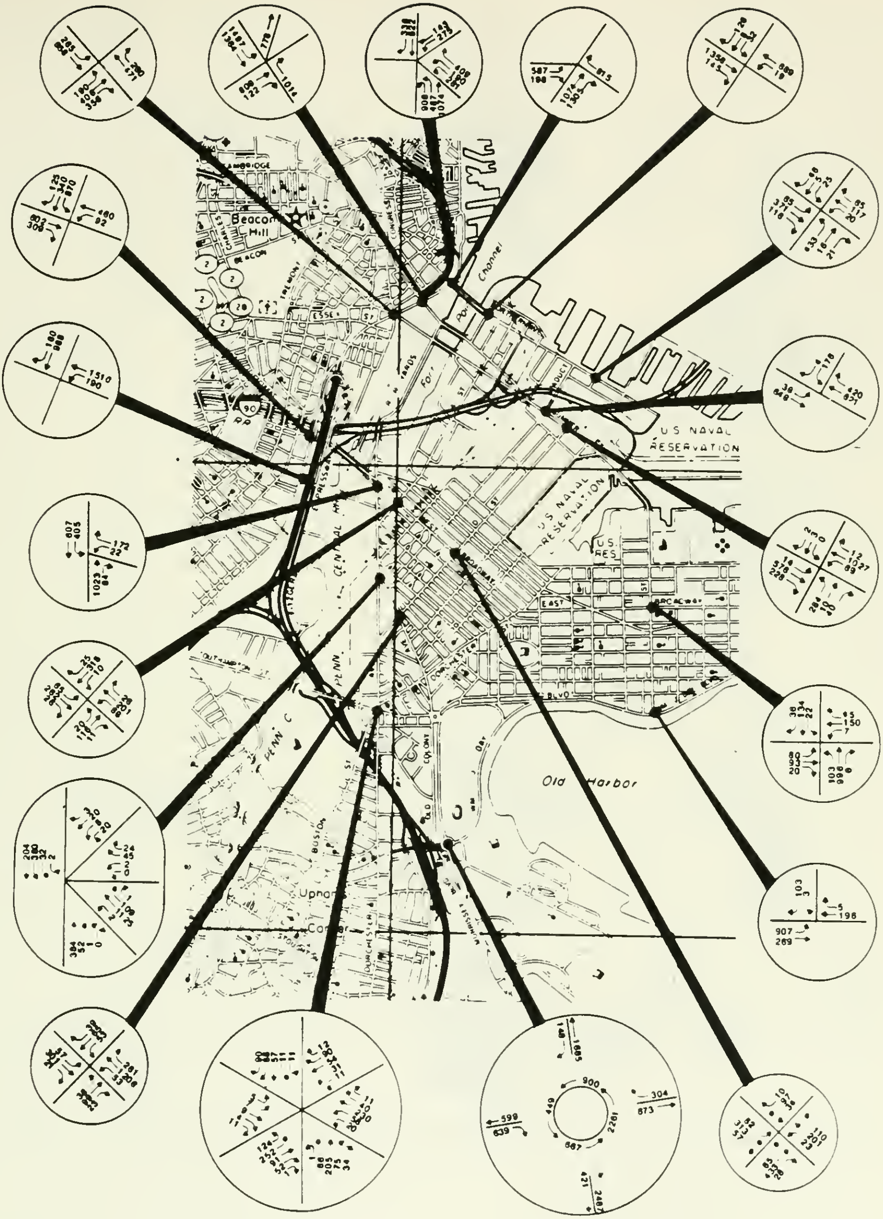


FIGURE 11b
1995 AM
Build
Volumes

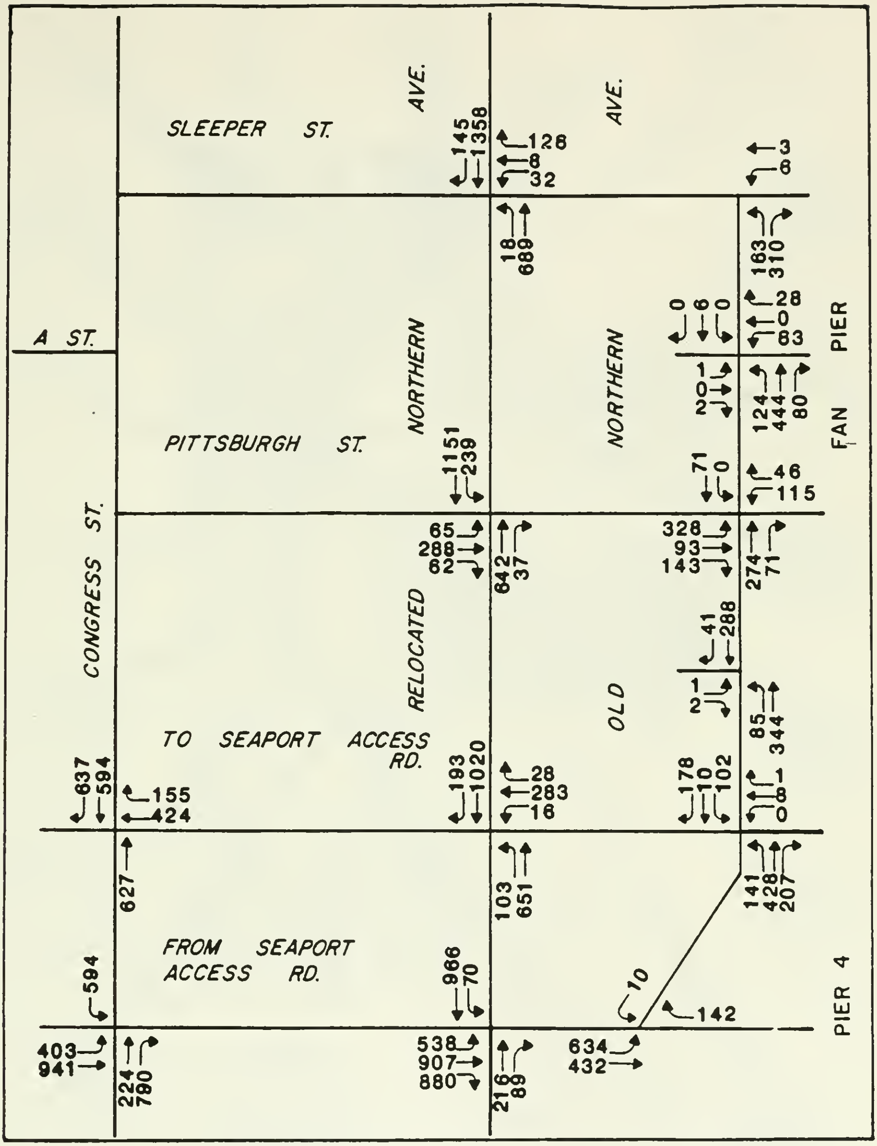


FIGURE 12a
1995 PM
Build
Volumes

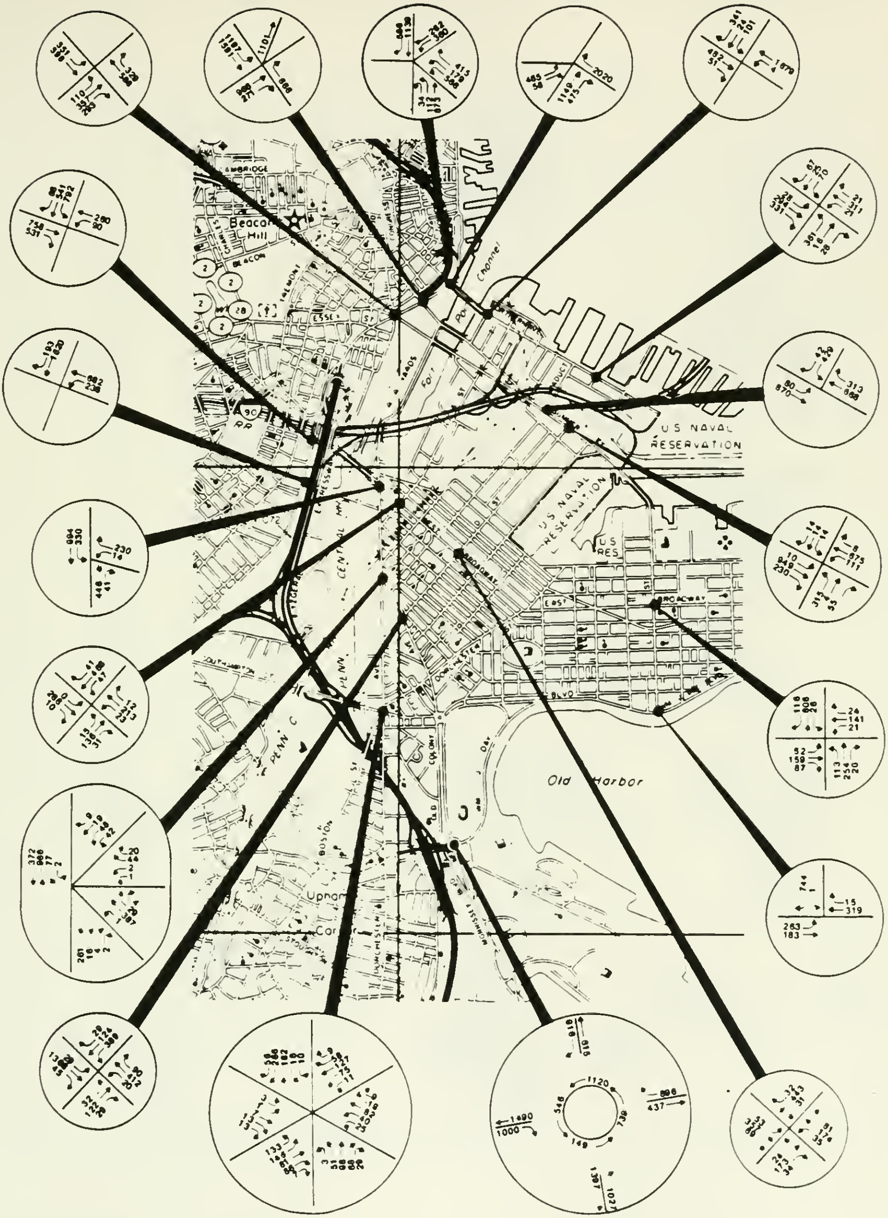
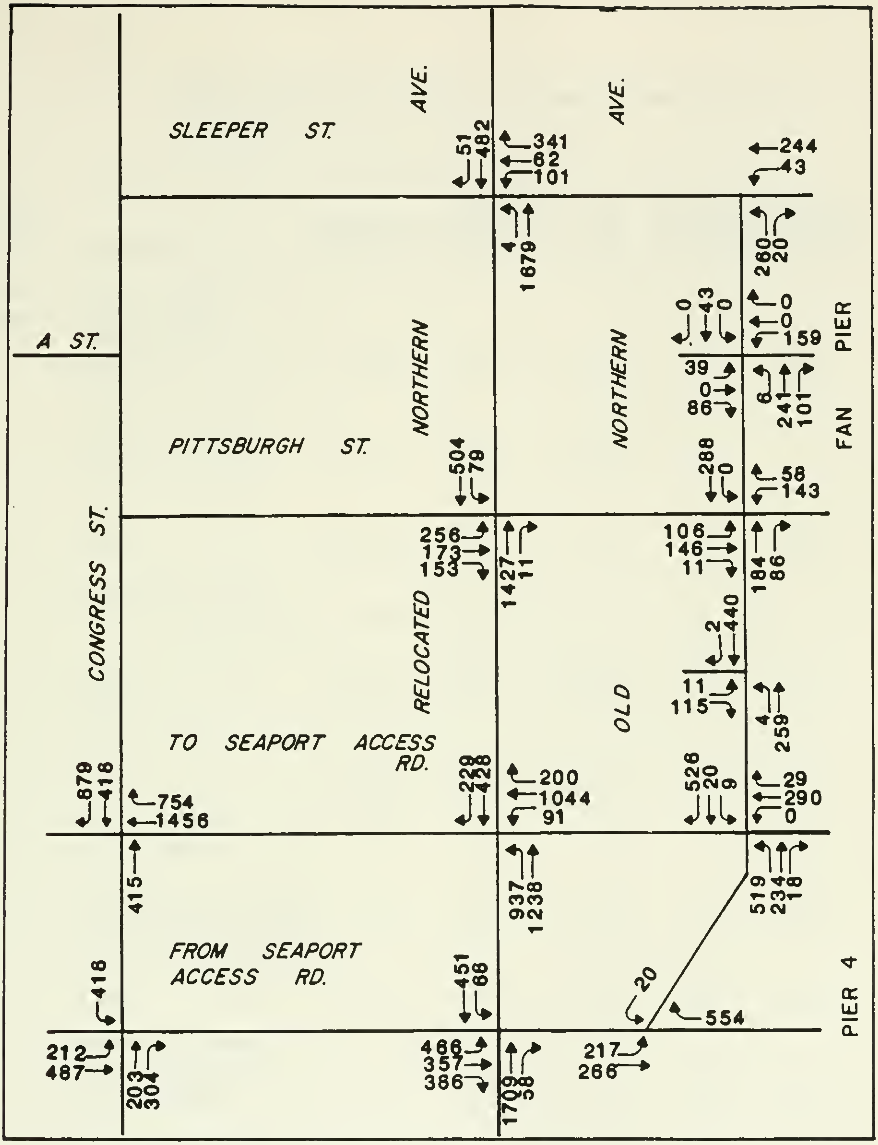


FIGURE 12b
1995 PM
Build
Volumes



evening peak hour traffic increases on selected study area roadways in 1995.

TABLE 20
1995 PM Peak Hour Roadway Increases With Seaport Access Road and Third Harbor Tunnel Project

Corridor	Existing Volume	1995 No-Build Volume	1995 Build Volume	Increase from No-Build to Build Amount	Increase from No-Build to Build Percent
Seaport Access Road Entrance south of Congress Street	N/A	1,630	2,335	705	43.3
Atlantic Avenue north of Northern Avenue	2,271	3,130	3,450	320	10.2
Northern Avenue Bridge	1,731	2,131	2,553	422	19.8
Northern Avenue west of Ramp Street	918	1,363	1,454	91	6.7
Congress Street Bridge	1,816	2,432	2,528	96	3.9
Summer Street Bridge	1,326	1,808	1,808	0	0.0
A Street north of Broadway	794	643	704	61	9.5
West Broadway east of Dorchester Avenue	672	612	612	0	0.0
West Fourth Street Bridge	887	920	920	0	0.0
Dorchester Avenue south of Old Colony Avenue	737	662	677	15	2.3
D Street south of Summer Street	612	683	729	46	6.7
Old Colony Avenue south of D Street	2,314	2,216	2,308	92	4.2
L Street south of Broadway	1,118	1,237	1,283	46	3.7

At Full Build in 1995, the greatest impact of the Fan Pier and Pier 4 Developments occurs at the entrance to the Seaport Access Road, where the projects add 700 vehicles in the afternoon peak hour. This represents a 43 percent increase over the No-Build volume. As a result of the heavy distribution of project traffic to the Seaport Access Road, project impacts at other locations are significantly less. Fan Pier/Pier 4 generated volumes add more than 420 vehicles to the Northern Avenue Bridge and 320 vehicles to Atlantic Avenue. In the same time period, the sites add 96 vehicles to the Congress Street bridge and similar volumes to Old Colony Avenue and Northern Avenue west of Ramp Street (92 and 91, respectively). The largest percentage increases in 1995 are on the Northern Avenue Bridge (20 percent), Atlantic Avenue (10 percent), and "A" Street (10 percent).

Intersection Analysis

The following pages summarize the 1995 No-Build and Build intersection levels of service for the morning and evening peak hours. The Existing Levels of Service section presented earlier provides an explanation of the terms level of service (LOS), volume-to-capacity (V/C) ratio, and available reserve capacity (ARC). The Appendix contains a detailed description of the traffic analysis procedure used to determine levels of service. Volumes used to calculate levels of service include the proposed shuttle bus demand as well as automobiles and trucks.

The results of the 1995 level of service analysis with the Third Harbor Tunnel and Seaport Access Road are summarized in Tables 21 and 22. In the morning peak hour, seven intersections will experience a decline in level of service from the No-Build to Build case. Six of those intersections will operate at Level of Service "D" or better while one would operate at Level of Service "F". Six of the seven intersections operating at Level of Service "E" or "F" under No-Build conditions would remain at those levels but would experience an increase in volume-to-capacity ratio or a decline in reserve capacity.

TABLE 21
Intersection
Analysis -
AM Peak Hour
for Existing
and 1995

Location	Existing		1995			
			No-Build		Build	
	V/C*	LOS**	V/C	LOS	V/C	LOS
East Broadway/L Street	0.53	A	0.57	A	0.58	A
West Broadway/D Street	0.64	B	0.65	B	0.66	B
Old Colony Avenue/ D Street	0.67	B	0.65	B	0.68	B
West Broadway/A Street	0.65	B	0.49	A	0.51	A
West Fourth/ Frontage Road	0.74	C	N/A	N/A	N/A	N/A
East Berkeley Street/ Albany Street	0.76	C	0.80	C	0.80	C
Herald Street/ Albany Street	0.55	A	0.68	B	0.68	B
Summer Street/Viaduct	0.53	A	0.54	A	0.57	A
Summer Street/ Atlantic Avenue	0.93	E	1.05	F	1.05	F
Northern Avenue***/ Atlantic Avenue	0.61	B	1.25	F	1.32	F
Congress Street/ Atlantic Avenue	0.83	D	1.26	F	1.32	F
Broadway Bridge/ Frontage Road	0.75	C	N/A	N/A	N/A	N/A
Summer Street/D Street	0.47	A	0.59	A	0.61	B
Andrew Square	0.71	B	0.78	C	0.79	C
High Street/ Atlantic Avenue	0.75	C	1.63	F	1.65	F

TABLE 21 (Continued) Intersection Analysis - AM Peak Hour for Existing and 1995

			1995			
	Existing		No-Build		Build	
Location	V/C*	LOS**	V/C	LOS	V/C	LOS
Old Colony Avenue/ Dorchester Avenue	0.57	A	0.56	A	0.57	A
Northern Avenue/ Ramp Street	149	D	0	E	0	E
Day Boulevard/ L Street	352	B	30	E	2	E
Northern Avenue***/ Sleeper Street	242	C	0.44	A	0.47	A
New Northern Avenue/ Pittsburgh Street	N/A	N/A	0.50	A	0.58	A
New Northern Avenue/ Seaport Access Road Entrance	N/A	N/A	0.60	A	0.63	B
New Northern Avenue/ Seaport Access Road Exit	N/A	N/A	0.74	C	0.89	D
West Broadway/ Dorchester Avenue	0.86	D	0.75	C	0.75	C
Old Northern Avenue/ Farnsworth Street Extension	N/A	N/A	771	A	339	B
Old Northern Avenue/ Pittsburgh Street	N/A	N/A	337	B	242	C
Old Northern Avenue/ Seaport Access Road Entrance	N/A	N/A	0.29	A	0.46	A
Kosciuszko Circle	1.03	F	1.12	F	1.17	F

TABLE 21 (Continued) Intersection Analysis - AM Peak Hour for Existing and 1995

			1995			
	Existing		No-Build		Build	
Location	V/C*	LOS**	V/C	LOS	V/C	LOS
Congress Street/Seaport Access Road Entrance	N/A	N/A	0.52	A	0.61	B
Congress Street/Seaport Access Road Exit	N/A	N/A	0.87	D	1.10	F

* Volume-to-capacity ratio (available reserve capacity for unsignalized intersections).

** Level of Service

*** Old Northern Avenue for existing conditions, New Northern Avenue for future conditions.

N/A = Not Applicable. Location is either not in place under existing conditions or is eliminated under future conditions.

TABLE 22
Intersection
Analysis -
PM Peak Hour
for Existing
and 1995

Location	Existing		1995			
			No-Build		Build	
	V/C*	LOS**	V/C	LOS	V/C	LOS
East Broadway/L Street	0.49	A	0.54	A	0.54	A
West Broadway/D Street	0.67	B	0.64	B	0.65	B
Old Colony Avenue/ D Street	0.82	D	0.83	D	0.86	D
West Broadway/A Street	0.59	A	0.56	A	0.58	A
West Fourth/ Frontage Road	0.68	B	N/A	N/A	N/A	N/A
East Berkeley Street/ Albany Street	0.64	B	0.67	B	0.67	B
Herald Street/ Albany Street	0.69	B	0.80	C	0.80	C
Summer Street/Viaduct	0.46	A	0.66	B	0.70	B
Summer Street/ Atlantic Avenue	0.94	E	1.32	F	1.32	F
Northern Avenue***/ Atlantic Avenue	0.91	E	1.04	F	1.13	F
Congress Street/ Atlantic Avenue	0.88	D	1.06	F	1.11	F
Broadway Bridge/ Frontage Road	0.60	A	N/A	N/A	N/A	N/A
Summer Street/D Street	0.56	A	0.61	B	0.64	B
Andrew Square	0.52	A	0.63	B	0.64	B
High Street/ Atlantic Avenue	0.90	D	1.01	F	1.05	F

TABLE 22
(Continued)
Intersection
Analysis -
PM Peak Hour
for Existing
and 1995

			1995			
	Existing		No-Build		Build	
Location	V/C*	LOS**	V/C	LOS	V/C	LOS
Old Colony Avenue/ Dorchester Avenue	0.44	A	0.43	A	0.44	A
Northern Avenue/ Ramp Street	144	D	0	E	0	E
Day Boulevard/L Street	251	C	77	E	44	E
Northern Avenue***/ Sleeper Street	0	E	0.61	B	0.65	B
New Northern Avenue/ Pittsburgh Street	N/A	N/A	0.63	B	0.74	C
New Northern Avenue/ Seaport Access Road Entrance	N/A	N/A	0.97	E	1.21	F
New Northern Avenue/ Seaport Access Road Exit	N/A	N/A	0.94	E	0.95	E
West Broadway/ Dorchester Avenue	0.70	B	0.55	A	0.55	A
Old Northern Avenue/ Farnsworth Street Ext.	N/A	N/A	490	A	294	C
Old Northern Avenue/ Pittsburgh Street	N/A	N/A	665	A	181	D
Old Northern Avenue/ Seaport Access Road Entrance	N/A	N/A	0.25	A	0.68	B
Kosciuszko Circle	1.05	F	0.98	E	1.01	F

TABLE 22
(Continued)
Intersection
Analysis -
PM Peak Hour
for Existing
and 1995

Location	Existing		1995			
			No-Build		Build	
	V/C*	LOS**	V/C	LOS	V/C	LOS
Congress Street/ Seaport Access Road Entrance	N/A	N/A	0.89	D	0.94	E
Congress Street/ Seaport Access Road Exit	N/A	N/A	0.43	A	0.59	A

* Volume-to-capacity ratio (available reserve capacity for unsignalized intersections).

** Level of Service

*** Old Northern Avenue for existing conditions, New Northern Avenue for future conditions.

N/A = Not Applicable. Location is either not in place under existing conditions or is eliminated under future conditions.

Seven intersections will experience a decline in level of service from the No-Build to the Build case in the evening peak hour. Four of those intersections will operate at Level of Service "D" or better while three will operate at Level of Service "E". Eight of nine intersections operating at Level of Service "E" or "F" under No-Build conditions will stay at those levels but experience an increase in volume-to-capacity ratio or a decline in available reserve capacity.

Table 23 provides a summary of the number of intersections which will operate at Levels of Service "A" through "D" and Levels "E" or "F" for Existing, No-Build, and Build conditions. A summary is provided for both the morning and evening peak hours. Figure 13 shows 1995 deficient locations before mitigation. For both the AM and PM peak hours (without mitigation), the projects will cause one intersection to go from acceptable to deficient conditions. The Mitigation Measures section presented below identifies locations and specific mitigation measures which will address the intersection deficiencies identified.

TABLE 23
Summary of Traffic Analysis Results

Analysis Condition	Number of Locations Analyzed	Number of Analysis Locations			
		AM		PM	
		LOS A-D*	LOS E-F**	LOS A-D*	LOS E-F**
Existing	21	19	2	17	4
1995 No-Build	27	20	7	18	9
1995 Build	27	19	8	17	10

* Considered acceptable
** Considered deficient

Central Artery Analysis

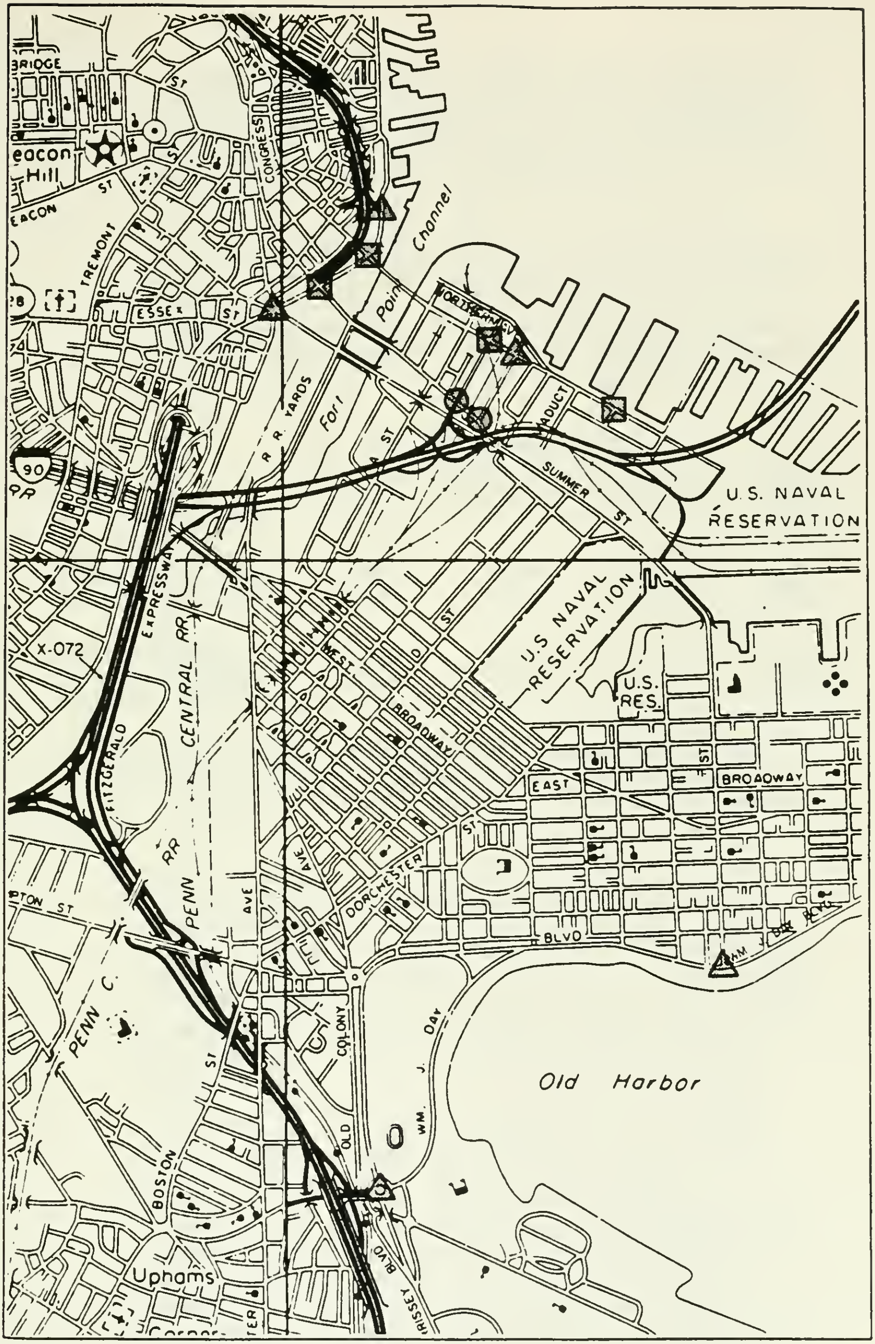
The purpose of this section is to present any additional volumes that background and Fan Pier and Pier 4 Developments will contribute to critical Central Artery congestion points. The two congestion point locations presented are the high level bridge over the Charles River at the junction of I-93 and Route 1, and the Massachusetts Avenue interchange south of Downtown. At both locations, existing congestion defines capacity. Currently, there are plans under way to replace the existing I-93/Route 1 interchange with a multi-level, fully directional interchange. This will result in

FIGURE 13
1995 Build
Traffic
Deficiency
Locations
Before
Mitigation

○ Deficiencies Created by Project In AM or PM Peak

▨ No-Build Deficiencies Impacted By Projects In AM or PM Peak

△ No-Build Deficiencies With Little or No Project Impacts



increased capacity at this location and a reduction in the congestion that results from the limitations of the current interchange. However, even with the proposed improvements, this location will remain a limiting point in the overall capacity of the Central Artery.

Table 24 lists morning inbound volumes and evening outbound volumes approaching these locations in the peak hour. The morning approach volumes to the high level bridge are the total of vehicles approaching from both I-93 and Route 1 (Tobin Bridge). Volumes for the Fan Pier and Pier 4 Developments, background developments, and total traffic are shown for each location.

TABLE 24
1995 Central Artery Peak Hour Volume Increases

Time/Location	Additional 1995 Volumes: Fan Pier/ Pier 4	Background Development	Total Additional	Total Volume*
Morning Inbound				
High level bridge	325	709	1,034	6,023
Massachusetts Avenue	571	2,848	3,419	9,365
Evening Outbound				
High level bridge	373	804	1,177	5,098
Massachusetts Avenue	656	2,720	3,376	8,778

* 1995 total traffic volumes are interpolated from 1990 and 2010 volumes given in the Supplement to the 1983 Draft Environmental Impact Statement for the Third Harbor Tunnel.

In the morning peak hour, 1995 background and project approach volumes at Massachusetts Avenue total over 3,400 or 36 percent of total traffic volume. Project volumes account for about 6 percent of the total, while background volumes account for 30 percent. The project and background volume approaching the high level bridge is about 1,000 or almost 17 percent of the total. Approximately 5 percent is project-related while the remaining 12 percent is from background development.

In the evening peak hour, outbound project and background traffic at Massachusetts Avenue would total nearly 3,400 or over 38 percent of the total. Approximately 7 percent would be project-related, and 31 percent would be from background developments. At the high level bridge there would be a total of about 1,200 vehicles in project and background traffic, representing about 23 percent of the total volume. Background development would account for 16 percent of the total while the Fan Pier and Pier 4 Developments would contribute 7 percent.

Therefore, future queuing on I-93 is expected to continue to be significant prior to completion of the Depressed Central Artery. However, only 7 to 8 percent of the total volumes at the main congestion points will be contributed by the projects.

Roadway Deficiencies Summary

The intersection level of service analyses previously discussed provide a comparative basis for describing roadway conditions in the study area under varying volume conditions. In addition to these analyses, field observations have identified several locations throughout the study area where driver mobility is hindered.

There are many elements of urban streets that have an impact on operating conditions, and not all of these elements are included in capacity analysis techniques. For example, the effects of suboptimal signal timing, narrow lanes and double parking are not easily incorporated in the analysis techniques. Therefore, additional information developed for area roadways during travel time runs and physical inventories are noted in the subsequent paragraphs. The listing of these data provides a summary of observed operating conditions that lead to identification of potential problem areas as well as mitigation measures. These observations are summarized separately for the morning and evening peak hours. It should be noted that a traffic management mitigation plan for the area may be designed to alleviate some of the deficiencies and to maintain others where free traffic flow is not the highest priority for the South Boston community.

In the morning peak hour, the following factors have been identified as reducing traffic flow and restricting mobility:

- Narrow lanes, curb parking, and pedestrian crossings along L Street;
- Auto/truck conflicts along D Street;
- Inefficient signal timing and auto/truck conflicts along A Street;
- Heavy right turn volume from Broadway Bridge to Frontage Road confined to single lane;
- Short weave distance between Central Artery off-ramp and Northern Avenue along Atlantic Avenue. New Northern Avenue Bridge alignment will eliminate this difficulty;

- Heavy volumes creating congestion at bottlenecks on the Central Artery between the Massachusetts Avenue and Massachusetts Turnpike interchanges, and at the high level bridge over the Charles River. The latter problem will be partially ameliorated by the construction of new ramps and interchange at I-93 and U.S. 1; and

- Heavy undirected pedestrian activity at several intersections, particularly at Summer Street and Atlantic Avenue.

The following summarizes major system deficiencies in the evening peak hour:

- Narrow lanes, curb parking, and pedestrian crossings along L Street.

- Inefficient signal timing and on-street parking along Old Colony Avenue.

- Inefficient signal timing and auto/truck conflicts along A Street.

- Narrow travel lanes and short storage lanes combined with heavy volumes along Broadway under the Central Artery.

- Uncontrolled intersection and two heavy converging traffic streams at Northern Avenue and Atlantic Avenue. This intersection will be signalized with the realignment of Northern Avenue, but heavy volumes will still result in congestion and delays.

- Heavy volumes and congestion on the Central Artery between the Massachusetts Avenue and the Massachusetts Turnpike interchanges, and at the high level bridge over Charles River.

- Heavy undirected pedestrian activity at several intersections including Atlantic Avenue at Summer Street and Atlantic Avenue at Northern Avenue.

The above observations generally summarize major problems in the study area roadway system. The intersection level of service analyses provide a more quantitative indication of problems at specific intersection locations. Measures to mitigate the potential impact of development on these problem areas will address general traffic management problems as well as specific roadway capacity problems.

PARKING IMPACTS

Loss of Existing Commuter Parking

The proposed development of the Fan Pier will result in the elimination of the current surface parking lot used by daily commuters. As a result, under 1995 development assumptions, it will be necessary for these commuters to locate alternative parking or use other means of travel. Analysis of the parking situation in Boston indicates that no comparably-priced parking alternatives are likely to be available and that the commuters will have to use public transportation or rideshare with other commuters who have a Downtown parking space.

The EIR prepared for International Place projected a deficit of 1,625 parking spaces in Downtown Boston under 1990 Build conditions. This projection was based on several assumptions including: the elimination of 2,000 spaces from the Fan Pier; construction of 2,250 new public spaces at South Station; reconstruction and expansion of the Post Office Square Garage to add 500 spaces; and the new availability of 250 existing spaces because of shifts to new parking at North Station. In addition to the International Place analysis, the 1983 report, "Parking in Central Boston," projected that parking demands in the financial district and South Station area will exceed available supply by 7,964 spaces in 1990. Based on this projected deficit, there would be no space available for the 1,125 vehicles currently parking on the Fan Pier.

If the 1990 projected 1,625-space deficit in Downtown were to be eliminated by increased ridesharing, the average work-trip vehicle occupancy rate (VOR) would have to increase by 14 percent. Such an increase is highly unlikely considering the downward trend in the overall VOR reported in the 1982 Cordon Count. According to that study, the overall average VOR had dropped from 1.57 in 1972 to 1.42 in 1982. It is estimated that if only one-third of the parking shortfall was made up by a shift to ridesharing, the average work trip VOR would still need to increase by 5 percent.

Those drivers who do not rideshare with other Downtown parkers would have to shift to public transportation. Table 25 shows the expected changes in Downtown VOR that would be associated with different levels of shifts to ridesharing and projects the additional transit trips which would result from current Fan Pier parkers at the different levels of shifts. The range runs from a 100 percent shift to rideshare (no impact on traffic or transit) to no shift (worst case for transit). The

projected increases in VOR associated with various levels of shifts are based on the International Place analysis described previously.

TABLE 25
Shift of Current Fan Pier Parkers to Transit and Ridesharing

Percent of Downtown Displaced Parkers Shifting to Ridesharing	Percent Increase in Downtown VOR*	Additional Transit Trips** from Current Fan Pier Parkers		
		Daily	AM Peak	PM Peak
100%	14%	0	0	0
50%	7%	1,700	385	345
33%	5%	2,266	514	460
0%	0%	3,398	767	690

* VOR - vehicle occupancy rate. Percent increases taken from International Place EIR.

** Based on an assumed VOR of 1.51 multiplied by the current trips to and from the parking lot.

The table estimates transit trips from the shifts of Fan Pier parkers assuming a VOR of 1.51 for vehicles currently parking on the Fan Pier. This rate was applied to work trips in "Parking in Central Boston," and is based on the overall average VOR of 1.42 from the 1982 Cordon Count. In the worst case, all current Fan Pier parkers would shift to transit. As a result, an estimated 3,400 trips daily would be added to the various public transportation services. In the morning peak hour, there would be almost 770 new transit trips, and in the evening peak hour, there would be approximately 690 new transit trips. To be conservative, the worst case assumption is used to estimate the impact of Fan Pier parkers on the transit system in the Public Transportation section.

Project Parking Demand and Supply

The focus of discussion on project parking demand and supply is on office and retail uses because the hotel and residential uses have allocated parking reserved exclusively for those uses. Fan Pier proposes 450 spaces for hotel users and 554 spaces for residential. Pier 4 will prove 290 parking spaces for the hotel and 850 spaces for residential users.

The number of parking spaces required by the office and retail uses for the Fan Pier and Pier 4 Developments was estimated from the vehicle-trip generation projections. Parking requirements are divided into long-term employee parking and short-term business/shopping parking.

Turnover rates of 1.0 for long-term (work-related) parkers and 2.67 for short-term (non-work related) parkers were assumed based on information presented in "Parking in Central Boston."

Based on the mode split assumptions described earlier in this chapter, a total of over 2,400 spaces will be needed to satisfy the projected demand of the project's office and retail uses at Full Build. As shown in Table 26, approximately 1,540 spaces would be required to meet Fan Pier demand and 878 spaces would be needed to meet Pier 4 demand.

TABLE 26
Project Office and Retail Parking Demand

Location	Long-term	Short-term	Total
Fan Pier	1,082	458	1,540
Pier 4	542	336	878
Total	1,624	794	2,418

The proposed supply of office and retail parking spaces on Fan Pier and Pier 4 is shown in Table 27. A total of 2,646 spaces will be provided for the office and retail uses. It should be noted that the number of retail spaces on Pier 4 does not include 360 spaces to be used by Anthony's Pier 4 Restaurant customers. The balance of the Pier 4 retail spaces will be restricted to use after the AM peak commuter hour, thus discouraging all-day use. For economic reasons, the developer will hold those spaces out of the long-term market and reserve them for short-term use.

TABLE 27
Proposed Office and Retail Parking Supply

Location	Office	Retail	Total
Fan Pier	1,325	171	1,496
Pier 4	572	578*	1,150
Total	1,897	749	2,646

* Does not include 360 spaces used by existing Anthony's Pier 4 Restaurant during daytime period. The remaining spaces will be restricted to use after the AM peak period so as to discourage automobile commuters.

The proposed office-related parking supply of one space per 1,000 square feet of office space exceeds that generally provided by Downtown developments. Because of the large supply of retail spaces proposed for Pier 4, all short-term parking demand generated by Pier 4 will be satisfied, resulting in a surplus of 242 short-term spaces. These spaces will be available to meet short-term demand generated by other development in the area. Long-term demand for 542 spaces on Pier 4 will be satisfied by the provision of 572 office-related spaces. On the Fan Pier, the total long- and short-term demand of 1,540 spaces will slightly exceed the office and retail supply of approximately 1,500 spaces. Therefore, the proposed parking supply will not provide any excess space which would allow additional commuting by automobile above the level anticipated under the trip generation assumptions.

PUBLIC TRANSPORTATION IMPACTS

Transit Trip Generation

Based on the trip generation assumptions referenced previously, the proposed Fan Pier and Pier 4 Developments will generate 23,720 transit trips daily at Full Build. As shown in Table 28, approximately 3,400 inbound transit trips would occur in the morning peak hour, and about 3,600 outbound trips would occur in the evening peak hour.

TABLE 28
1995 Project-Related Transit Trip Generation

	Fan Pier	Pier 4	Project Total	Current Fan Pier Parkers*	Total
Daily	17,060	6,660	23,720	3,398	27,118
AM Peak					
In	2,444	950	3,394	767	4,161
Out	261	156	417	0	417
Total	2,705	1,106	3,811	767	4,578
PM Peak					
In	417	214	631	27	658
Out	2,598	1,015	3,613	663	4,276
Total	3,015	1,229	4,244	690	4,934

* Worst case scenario based on all parkers currently using Fan Pier shifting to transit.

In addition to the transit trips generated by the new construction on the site, the proposed projects will also create additional transit demand by displacing the commuters who currently park at the Fan Pier. As discussed previously, these displaced parkers will likely be unable to find comparably priced alternative parking. As a result, they are expected to use transit or carpool with others. The maximum impact on public transportation will occur if none carpool and all use transit. When the displaced parkers are combined with the transit trips generated by Fan Pier and Pier 4, the result is a total of almost 4,200 new inbound transit trips in the morning peak hour and almost 4,300 new outbound transit trips in the evening peak hour.

Other development activity will also generate new demands for transit service. In addition to the Downtown and South Boston background developments considered in the traffic impact analysis, developments in Cambridge along the Red Line were included in background transit trip generation. In all, seven transit background developments are located in South Boston, 20 are Downtown, and seven are in Cambridge.

Other developments Downtown, in South Boston, and in Cambridge are expected to generate approximately 28,650 new inbound transit trips in the morning peak hour and almost 29,000 new outbound trips in the evening peak hour. About 72 percent of these background trips will be generated by Downtown development, 19 percent by Cambridge projects, and 9 percent by South Boston developments.

This projection of background transit trips is based on those developments listed in the Appendix as transit background developments. In order to account for future shifts to transit because of projected Downtown parking deficits and any other development not included as background, an additional one percent increase in current ridership was projected for each line. The one percent increase is not included in the background transit volumes given above, but is reflected in 1995 No-Build and Build transit volumes.

Shuttle Bus System

A major component of the future transit system in the project area will need to be a high frequency transit connection to link South Boston developments to the full array of transit services available Downtown. Such a connection can be provided by a fixed guideway system, which will be explored in the World Trade Center EIR, or by a shuttle bus system, which is explored in detail in

the mitigation section. It is felt that a well planned and designed bus system such as is detailed in this Access Plan can satisfactorily accommodate project and background passenger demands well into the future, until such time as a more permanent fixed guideway system is in place.

In this section, the proposed shuttle system is described in terms of service quality because, from the passenger's viewpoint, quality of service is essential to achievement of the desired transit mode split. The high-quality service proposed, in turn, raises several operational questions: How will the service work from an operator viewpoint, who will be responsible for it, who will actually operate it, what will it cost, and how will the costs be paid? While the shuttle system is not a mitigation action per se, the mitigation section is the appropriate place to address the latter type of question. Therefore, cost information, together with operational data used to derive those costs (e.g., routings, passenger volume, vehicle capacity, fleet size requirements and unit costs) are presented under Mitigation Measures.

In brief, the proposed shuttle system will connect four Downtown transit nodes (South Station - Red Line, bus, rail; Government Center - Green and Blue Lines; Haymarket - Green and Orange Lines, bus; and Aquarium - Blue Line, boat) with four stops in South Boston, serving the Fan Pier, Pier 4, Cabot Cabot & Forbes, Commonwealth Pier, Fish Pier and Commonwealth Flats. The transit analysis assumes that no fares will be collected on the bus itself so as to optimize the service level provided.

The shuttle bus system will provide direct non-stop or limited-stop service on reliable full-size transit buses, with minimal wait times and very short walk distances. Service will be bi-directional at all times. Because the service concept is a point-to-point shuttle, rather than a typical local bus route, most riders will have non-stop service, and the vast majority will stop at no more than one bus stop between boarding and alighting. For most people using public transit to reach the sites, the shuttle will be by far the most convenient link of their journey.

In the morning peak hour, passengers bound for South Boston will be able to board shuttles at South Station, Government Center or Haymarket. This means that shuttles will connect directly with every rapid transit line, all private carrier and MBTA express buses, and all South Station commuter rail routes. The Haymarket

shuttle stop is just a 1/4-mile walk from the North Station commuter rail terminal. Since all transit lines are served directly, no transfers between lines are necessary to reach the shuttle.

Shuttles from South Station will reach their destinations in just five or six minutes, traveling via exclusive high-occupancy vehicle lanes on the Seaport Access Road. These shuttles will offer non-stop service to each of two points on Old Northern Avenue as well as to Commonwealth Pier. Shuttles to Commonwealth Pier will make a subsequent stop at Commonwealth Flats.

Passengers boarding shuttles at Government Center or Haymarket will reach their destinations in 10 to 15 minutes, traveling via Congress Street. In South Boston, these shuttles will provide non-stop service to two Old Northern Avenue points and to Commonwealth Flats, and one-stop service to Commonwealth Pier.

In the PM peak hour, shuttles will travel from the same South Boston points to South Station, making the trip in five or six minutes via the exclusive high-occupancy vehicle lanes. Shuttles will also carry passengers up Atlantic Avenue to Aquarium Station in 5 to 10 minutes. The trip via shuttle to Government Center will take 15 to 20 minutes depending on Downtown traffic conditions.

All travel time forecasts have taken into consideration the traffic level of service impacts of 1995 project and background development as well as the recommended traffic mitigation measures discussed later in this report. Also taken into account was the travel time improvement recently achieved when the City of Boston Transportation Department cleared Congress Street of all parked and double parked cars.

Each shuttle route will provide very frequent service. On average, shuttle riders will wait two minutes for service during both the AM and PM peak hours. On the least frequent shuttle route, average wait time will be less than four minutes in both peak hours.

During the remainder of the 13-hour service day, all shuttle stops Downtown and in South Boston will continue to be served. Fewer riders will have non-stop service, but the resulting delays may be offset by higher travel speeds (due to lighter off-peak traffic levels). During off-peak periods, all shuttles will operate at 10-minute intervals and, therefore, average wait time will be about five minutes. Wait times of this magnitude are viewed by most passengers as minimal.

Suburban Express Bus System

As an added convenience for public transportation users, a network of suburban express buses will likely serve South Boston directly via the Seaport Access Road. For-profit commuter bus services have grown significantly during the past 10 years and ridership on MBTA express routes has also increased. The 1982 Cordon Count shows that 18 to 19 percent of all peak hour, peak direction transit passengers crossing the Downtown cordon line were on buses. A review of existing service and ridership suggests several financially viable express routes to South Boston, which together would capture about 13 percent of all peak hour transit trips. The most promising suburban destinations are Newton Corner, the Riverside MBTA Station and the Rockland Park-and-Ride Lot on the South Shore. It is also likely that some of the MBTA's North Shore buses, which now serve Haymarket Station via the Sumner Tunnel, will be rerouted to South Boston via the Third Harbor Tunnel, with a stop in South Boston. Suburban express buses are discussed further under Mitigation Measures.

Transit Trip Assignment

The assignment of transit trips to the various transit modes and lines was based on the 1982 Cordon Count for Downtown Boston, 1980 Census journey-to-work data for South Boston, and existing rapid transit usage. As shown in Table 29, the 1982 Cordon Count indicates that 68 percent of PM peak hour transit trips leaving Downtown were on rapid transit, 18 percent were on buses, and 14 percent were on commuter rail. The 1980 Census data for South Boston indicate a larger share of bus trips and a smaller share of rapid transit trips than observed Downtown. This reflects the greater accessibility to buses than to rapid transit lines.

Transit trips were assigned to the major transit modes based on the type and location of the developments. The 1982 Cordon Count distribution was used for the six South Boston developments located near the Fort Point Channel along Northern Avenue and for all Downtown developments. The South Boston census data were used for the three South Boston developments that are located away from the project sites. This approach was selected based on the assumption that, given their accessibility to all Downtown transit lines, the proposed projects and other nearby developments would have a transit mode use pattern similar to Downtown. For Cambridge developments, the cordon count mode split was adjusted by reducing the commuter rail share and increasing the bus share, based on the transit analysis in the Draft EIR

for University Park. Table 30 shows the assignment of Fan Pier/Pier 4 and background peak hour trips to major transit modes.

TABLE 29
Distribution of Peak Hour Transit Trips by Mode

Mode	Line	1982 Cordon Count (Downtown)	1980 Census (South Boston)*
Bus	Local	N/A	33%
Express	N/A	7%	
Total	18%	40%	
Rapid Transit	Red	N/A	22%
	Orange	N/A	15%
	Green	13%**	10%
	Blue	N/A	7%
	Total	68%	54%
Commuter Rail	North	N/A	1%
	South	N/A	5%
	Total	14%	6%
Total		100%	100%

* Journey-to-work data for census tracts 606 and 614 which generally include areas of South Boston north of the Reserved Channel and Summer Street and west of D Street south to Dorchester Avenue. Distribution by line within each mode estimated from geographic distribution by city and town.

** Percent distribution by "streetcar".

The transit analysis concentrates on the rapid transit system because its capacity will be relatively fixed and because it carries such a large share of total transit trips. As previously described, each rapid transit line can only accommodate a fixed number of cars per train. On some lines, peak hour train frequencies are near the maximum limit. In contrast, the commuter rail system can be expanded by the addition of cars to existing trains or by the scheduling of additional trains. The capacity of the bus system can also be expanded by operating additional vehicles.

TABLE 30
New Peak Hour 1995 Transit Trips by Mode

Mode*	Fan Pier/ Pier 4** AM In	Fan Pier/ Pier 4** PM Out	Background*** AM In	Background*** PM Out	Total AM In	Total PM Out
Bus	749	770	5,850	5,903	6,599	6,673
Rapid Transit	2,830	2,908	19,612	19,813	22,442	22,721
Commuter Rail	582	598	3,188	3,245	3,770	3,843
Total	4,161	4,276	28,650	28,961	32,811	33,237

* No commuter boat assignment is made because current usage is not a significant share of total transit.

** Includes current users of Fan Pier parking lot.

*** Based on transit background developments listed in the Appendix.

Rapid transit trips were assigned to the various lines based on the distributions shown in Table 31. Trips to and from three South Boston background developments (Boston Wharf Properties, Boston Marine Industrial Park, and Gillette) were assigned using the distribution based on the census data for South Boston. For all other developments, as well as displaced Fan Pier parkers, assignments were based on existing line ridership.

TABLE 31
Assignment of New Rapid Transit Trips by Line

Line/Segment	Boston Wharf BMIP, and Gillette*	Project, Downtown and other South Boston**
Red/North	14%	12%
Red/South	27%	23%
Green/West	16%	17%
Green/North	3%	2%
Orange/North	17%	20%
Orange/South	11%	14%
Blue/North***	12%	12%
	100%	100%

* Based on 1980 Census journey-to-work data.

** Based on existing rapid transit ridership.

*** No assignment is made for the Blue Line to Bowdoin as it would principally accommodate transfers to other lines.

Rapid Transit Analysis

In order to provide a basis for evaluating the impacts of the No-Build and Build alternatives on the rapid transit system, Table 32 compares current ridership to current planning capacity. Trains on the Orange Line/ North are currently somewhat overcrowded during the PM peak hour. Ideally, that segment should have 10 percent more capacity than it does currently. However, a 110 percent utilization rate usually would not cause severe problems, and the current capacity may even be a reasonable target given the underutilization (76 percent) on the south half of the line. The Green Line/West operates at an unacceptable 133 percent of planning capacity. This level of capacity shortfall causes severe operational problems including excessive dwell times, which result in further capacity losses.

TABLE 32
Existing Rapid Transit Capacity and Ridership: PM Peak Hour Outbound

Line	Existing Planning Capacity*	Existing Ridership**	Ridership as Percent of Capacity
Red Line/North	10,800	7,140	66%
Red Line/South	11,520	11,190	97%
Green Line/West	7,500	10,000	133%
Green Line/North	2,600	1,100	42%
Orange Line/North	9,300	10,270	110%
Orange Line/South	9,300	7,080	76%
Blue Line/North	6,600	6,120	93%

* See Table 8.
** See Table 9.

The impact of the proposed Fan Pier and Pier 4 Developments on the rapid transit system's seven peak load points will be to increase ridership by 4 percent over the No-Build alternative. As shown in Table 33, the Fan Pier and Pier 4 Developments are expected to add approximately 2,800 inbound transit trips in the morning peak hour. In the evening, 2,900 outbound trips are expected. These projected volumes include transit trips made by the current users of the Fan Pier parking lot. Background developments will have a much greater impact, generating approximately 17,700 inbound trips through

peak load points in the morning and 17,900 outbound trips in the evening. These background rapid transit volumes are less than the rapid transit volumes shown in Table 29 because some rapid transit trips to and from Cambridge background developments will not pass through peak load points and, hence, are not included in the rapid transit capacity analysis.

TABLE 33
New Peak Hour Rapid Transit Trips by Line

Line/ Direction	Fan Pier/Pier 4* In AM	Fan Pier/Pier 4* Out PM	Background** In AM	Background** Out PM	Total In AM	Total Out PM
Red/North	340	349	1,868	1,900	2,208	2,249
Red/South	651	669	3,979	4,015	4,630	4,684
Green/West	482	494	2,755	2,789	3,237	3,283
Green/East	56	58	331	335	387	393
Orange/North	565	581	3,843	3,886	4,408	4,467
Orange/South	396	407	2,684	2,711	3,080	3,118
Blue/North	340	349	2,272	2,299	2,612	2,648
Total All Lines	2,830	2,907	17,732	17,935	20,562	20,842

* Includes current users of Fan Pier parking lot.

** Based on developments listed as transit background projects in the Appendix. Includes only those trips which pass through peak load points in the peak direction for the system.

Future rapid transit line capacities are shown in Table 34. They are based on MBTA plans to increase average train lengths on the Red, Orange and Green Lines. Six-car trains will operate at currently observed frequencies on the Red Line, resulting in a 50 percent capacity increase. On the Orange Line, six-car trains will operate at slightly lower frequency (4.5 minute headway versus current four-minute headway) for a 33-percent capacity increase.

The Green Line forecast is somewhat more complex. The MBTA operations department has identified four major Green Line improvements which, together with increased operating funds, would expand westbound PM planning capacity from the current 7,500 passengers (58 cars) per

hour to a goal of 14,300 passengers (110 cars) per hour. These improvements are:

1. Purchase 100 new LRVs, thus adding significantly to the current fleet of 124 active cars.

2. Upgrade the power system to propel three-car trains.

TABLE 34
1995 Rapid Transit Line Capacity: PM Peak Hour

Line/Segment	Average Cars/ Train	Average Headway* (minutes)	Average No. of Trains	Car Capacity**	Line Capacity
Red Line/North					
Ashmont-Alewife	6	4	15	180	16,200***
Braintree-Alewife					
Red Line/South					
Alewife-Ashmont					
Alewife-Braintree	6	3.75	16	180	17,280
Park-Quincy					
Green Line/West					
Boston College					
Cleveland Circle	2.65****	1.62	37	130	12,740
Riverside					
Huntington Avenue					
Green Line/North					
Lechmere Service	2	6	10	130	2,600
Orange Line/ North-South					
Oak Grove- Forest Hills	6	4.5	13.33	155	12,400
Blue Line					
Bowdoin-Wonderland	4	4	15	110	6,600

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* Projected headways are based on maintenance of existing headways except on the Orange Line where a slight increase is planned by the MBTA.

** The MBTA uses these capacity estimates for planning purposes. Heavier loads can be carried and are often observed on the system.

*** Capacity is slightly lower than Red Line/South because the Quincy-Park run is not included.

**** Represents 13 two-car trains (mostly serving Huntington Avenue and Lechmere) and 24 three-car trains on other lines.

3. Lengthen platforms at Science Park (an elevated station) and at certain surface-line stations to accommodate three-car trains on all lines except Huntington Avenue.

4. Upgrade the signal system to allow scheduling of 75-second average headways in the central subway.

The first three actions will allow for longer trains, while the fourth project would allow more trains to flow through the stations during the peak hour.

The Green Line capacity forecast of 12,740 passengers in 98 cars per hour used in this Access Plan (as opposed to the MBTA goal of 14,300 passengers in 110 cars per hour mentioned above) accounts for the 100 new LRVs, the last of which are scheduled for delivery in 1987. The power system upgrade, although not yet fully funded, is seen by the MBTA as quite certain to be complete before 1994 and, therefore, is also assumed in this forecast. Funding for Green Line platform extensions is not definite; this report presumes that the inexpensive extensions (those at surface line stations), but not the more costly Science Park extension, will be completed. The signal system upgrade is not assumed, since its funding is uncertain and, more importantly, there is disagreement among MBTA officials as to whether the project would increase capacity, or only reliability.

These assumptions lead to the conclusion that the Green Line PM peak hour service in 1994 will consist of 13 two-car LRV trains, most of which will serve Huntington Avenue and Lechmere, and 24 three-car LRV trains distributed among the other three branches. The total number of trains per hour is 37, which the existing signals already handle. The increased capacity results from longer trains.

The projected volumes shown in Table 35 indicate that when both background development and the Fan Pier and Pier 4 projects are built, ridership will be under planning capacity on four rapid transit line segments, and over planning capacity on three. The Blue Line, for which no capacity increases have been announced by the MBTA, will operate at 134 percent of planning capacity. For comparison, the Green Line/West currently operates at 133 percent of capacity. Therefore, this projection means that overcrowding on the Blue Line in 1995 will be comparable to that seen on the Green Line today, unless new capacity is added as discussed under Mitigation Measures.

TABLE 35
1995 Rapid Transit Ridership and Capacity: PM Peak Hour

Line/ Segment	1995 Planning Capacity*	1995 No-Build		1995 Build	
		Ridership	Percent of Capacity	Ridership*	Percent of Capacity
Red/North	16,200	9,111	56%	9,460	58%
Red/South	17,280	15,317	89%	15,986	93%
Green/West	12,740	12,889	101%	13,383	105%
Green/North	2,600	1,446	56%	1,504	58%
Orange/North	12,400	14,259	115%	14,840	120%
Orange/South	12,400	9,862	80%	10,269	83%
Blue/North	6,600	8,840	128%	8,829	134%

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* Car capacities are the planning figures used by the MBTA. Heavier loads can be carried and are often observed on the system.

** Includes a one percent growth factor plus the impacts of all transit background developments listed in the Appendix.

In summary, the projection of Fan Pier and Pier 4 transit trips was based on high transit mode split trip generation assumptions and includes transit trips generated by the current users of the Fan Pier parking lot. Transit trips from other developments include all Downtown and South Boston background developments identified for the traffic analysis as well as Cambridge developments served by the Red Line. Also included is a generalized growth factor to account for shifts to transit at existing developments and other potential development by 1995.

MITIGATION MEASURES

As a result of the many public and private projects, including the Fan Pier and Pier 4 Projects, that have been or will be developed along Northern Avenue, in the Commonwealth Flats development area, and Downtown travel demand increases can be expected throughout the study area through the end of the century. As demonstrated in the preceding impact analysis, some systems in the study area will be able to absorb the cumulative growth from all developments and still maintain acceptable levels of service. Others will be handling volumes at or in excess of their capacity during the peak hours unless mitigation measures are implemented.

Most of the study area's future estimated traffic will occur even without the proposed Fan Pier and Pier 4 Developments because of the continuing growth trend in the area. The developers are concerned with issues related to traffic growth and feel it is important to outline a comprehensive program of measures to mitigate potential adverse impacts, especially for the South Boston residential community. The developers have included mitigation measures in three general categories: Traffic Operations Improvements, New Roadway Capacity, and Demand/Reduction Management. These measures address not only the developers' projects, but also the larger issue of areawide traffic growth caused by other developments in South Boston and Downtown.

The provision of transit service is not viewed as a mitigation measure since extensive improvements in bus transit have been assumed in base planning parameters for the projects. The developers concur with state and city officials that development of the overall Fort Point Channel/Northern Avenue/Commonwealth Flats area requires upgrading of public transportation to accommodate long-term development potentials. They are also committed to working with all area developers and transit operators to assure that the appropriate systems are in place as development occurs. A primary thrust of Final EIR transportation planning has thus been to devise a system of transit improvements which are necessary to meet travel demands generated by developments anticipated in the area by 1995, and are expandable to meet travel demands generated by future developments in the nearby area over the long-term. Accordingly, the detailed operational characteristics of a transit service capable of being implemented and fully operational in 1995 are included in this Mitigation Measures section.

Currently, the World Trade Center developers and city/state agencies are studying the potential of a people mover as a long-term solution for the Northern Avenue/Commonwealth Flats area. Therefore, no analysis of a people mover is included in this Access Plan. The proponents of the Fan Pier and Pier 4 projects look forward to reviewing the feasiblity analysis of such a system and see it as complementary to the bus system designed and analyzed for this Plan.

Many of the specific suggestions to relieve impacts in the study area are dependent on actions by governmental agencies. The developers are committed to working with the city and state to insure that a meaningful program of mitigation actions is identified and implemented.

Particular attention in defining this program will be given to the Fan Pier and Pier 4 Citizens Advisory Committee (CAC) and local residents so that mitigation actions respond to their concerns.

The Mitigation Measues section is organized as follows:

- First, there is a discussion of transit services necessary to link MBTA service to the Northern Avenue/Commonwealth Flats development area, and to provide supplementary direct line haul service from suburban locations. The discussion concentrates on bus systems as agreed to with MEPA. The World Trade Center's expected EIR on their proposal for Commonwealth Flats will concentrate on fixed guideway (people mover) applications.

- Second, "Traffic Operations Improvements" that would be required at locations exhibiting significant deficiencies in capacity are described. Most of the anticipated traffic problems in South Boston will occur even without the Fan Pier and Pier 4 Projects and these recommendations are made irrespective of these projects.

- Third, proposed measures dealing with "New Roadway Capacity" are described. These are compatible with the I-90/I-93 project.

- Fourth, a comprehensive program of "Demand Reduction/Management" measures is presented. This includes options that are aimed at reducing vehicle traffic by encouraging other travel modes or by managing vehicle traffic more efficiently to reduce peak hour impacts. Implementation of these measures would result in much improved mobility in the study area and in the larger Boston region.

- Finally, an analysis summary is provided which identifies the likely results at key analysis locations of the combined set of mitigation actions in the traffic operations and roadway network categories. A qualitative evaluation is also provided of the likely impact of measures in the "Demand Reduction/Management" category.

Table 36 summarizes the full mitigation program discussed on the following pages and indicates the implementing agency or organization for each measure. It should be noted that although the program focuses on the 1995 Full-Build case, planning should begin now for early implementation of many of these measures to manage existing traffic and traffic growth over the next

TABLE 36
Summary of Mitigation Measures and Proponent Commitments

Category	Mitigation Measure	Implementing Agency	Proponent Commitments
Required Transit Services	o Shuttle bus system	o MBTA	Assistance in operation planning, on-site improvements for boarding/alighting areas, and interim service contract prior to public operation
	o Suburban express bus system	o MBTA, Private bus operators	Assistance to operators for route planning
Traffic Operations Improvements	o Intersection-Related improvements	o BTD	Planning services for intersection design
	o Arterial-Related improvements	o BTD, MDC	Planning service and contribute funds for engineering and streetscape improvements
	o System-Related improvements	o BTD	Work with city to devise delivery vehicle scheduling policy
	o South Boston Transportation Study	o BTD	Partial funding of study
New Roadway Capacity	o Advance construction of links to Seaport Access Road	o BTD, MDPW	Planning services
	o South Boston Bypass Road	o MDPW, BTD	Planning services
	o Reopening of Dorchester Avenue	o BTD, MDPW, USPS	Planning services
Demand Reduction/ Management	o MBTA rapid transit improvements	o MBTA	Planning assistance
	o Water shuttle	o MBTA, BRA, EOTC, Massport	Feasibility study completed. Boat landings and passenger facilities to be provided on site. Provision of promotional materials to tenants
	o Water taxi	o MBTA, BRA, EOTC	Pier 4 to initiate and operate water taxi.
	o Pedestrian access	o BTD, BRA, MDPW	Old Northern Avenue to have ample pedestrian environment funded by proponents
	o Agency coordination and liaison	o Various agencies, Fan Pier/Pier 4 developers	Provide continuing planning services to agencies

* BRA = Boston Redevelopment Authority
BTD = Boston Transportation Department
CTPS = Central Transportation Planning Staff
EOTC = Executive Office of Transportation and Construction
Massport = Massachusetts Port Authority
MBTA = Massachusetts Bay Transportation Authority
MDC = Metropolitan District Commission
MDPW = Massachusetts Department of Public Works
USPS = United States Postal Service

several years from background developments as well as the proposed projects.

Several improvements to the existing roadway and transit systems are included under the mitigation measures although they have also been included in the 1995 Build analysis presented in the Probable Project Impacts section. These have been described previously but are also included here because certain aspects of these measures involve actual mitigation actions on the part of the developers or an implementing agency. They include the expansion of the public transportation system to include a shuttle bus link between Downtown and South Boston and express bus service to South Boston; advanced construction of the ramp links to the Seaport Access Road; and lane use modifications along Relocated Northern Avenue and intersecting streets.

REQUIRED TRANSIT SERVICES/ROUTES

Shuttle Bus System

The shuttle system introduced in the Probable Project Impacts Section will consist of six routes. The South Boston development zone is divided into three areas (eastern, central, and western), each of which will be served by two routes: one to South Station, and one to Government Center. The three Government Center routes will also serve Haymarket and Aquarium. Figure 14 displays the three shuttle routes to South Station, while Figure 15 shows the three shuttle routes to Government Center.

The eastern area routes will serve Commonwealth Pier, the Fish Pier, and Commonwealth Flats. The central area routes will serve Pier 4 and the easternmost Fan Pier office building fronting on Relocated Northern Avenue. The western area routes will serve the Fan Pier Development, except the easternmost parcel, and future development at CC&F.

South Station shuttles will travel via the Seaport Access Road (SAR) high-occupancy vehicle (HOV) lane to the SAR Exit Road. Those serving the central area will travel just one block west on Old Northern Avenue before returning via the SAR Entrance Road. Their stop will be the east half of the Pier 4 parcel on Old Northern Avenue, where a sheltered waiting area will be provided. Those shuttles serving the western area will follow Old Northern Avenue all the way to Sleeper Street, stopping at the Fan Pier parcel west of Pittsburgh Street, where a sheltered waiting area will be provided, and returning to the SAR Entrance Road via Relocated Northern Avenue.

FIGURE 14
Peak Hour
South Station
Shuttle
Routes

▬▬▬
Western
Area Route

••••••••••
Central
Area Route

— — —
Eastern
Area Route

▲
Western
Area Stop

●
Central
Area Stop

■
Eastern
Area Stops

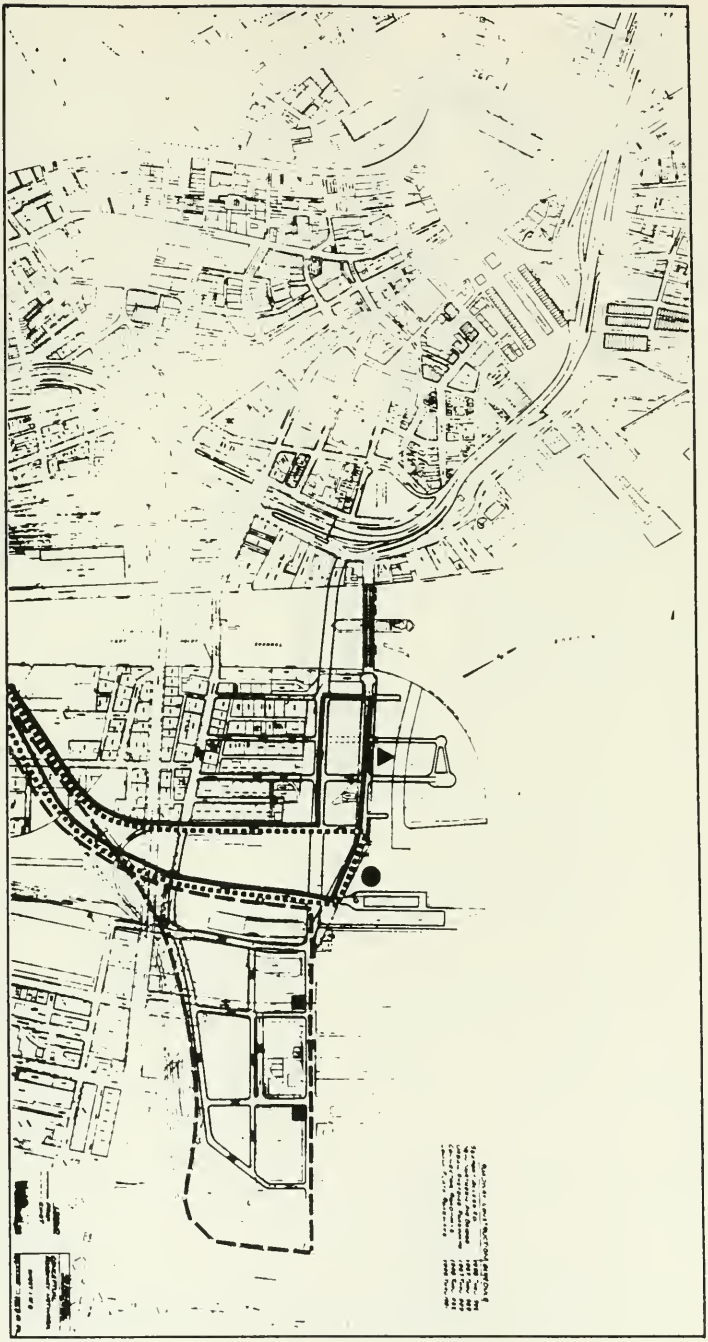
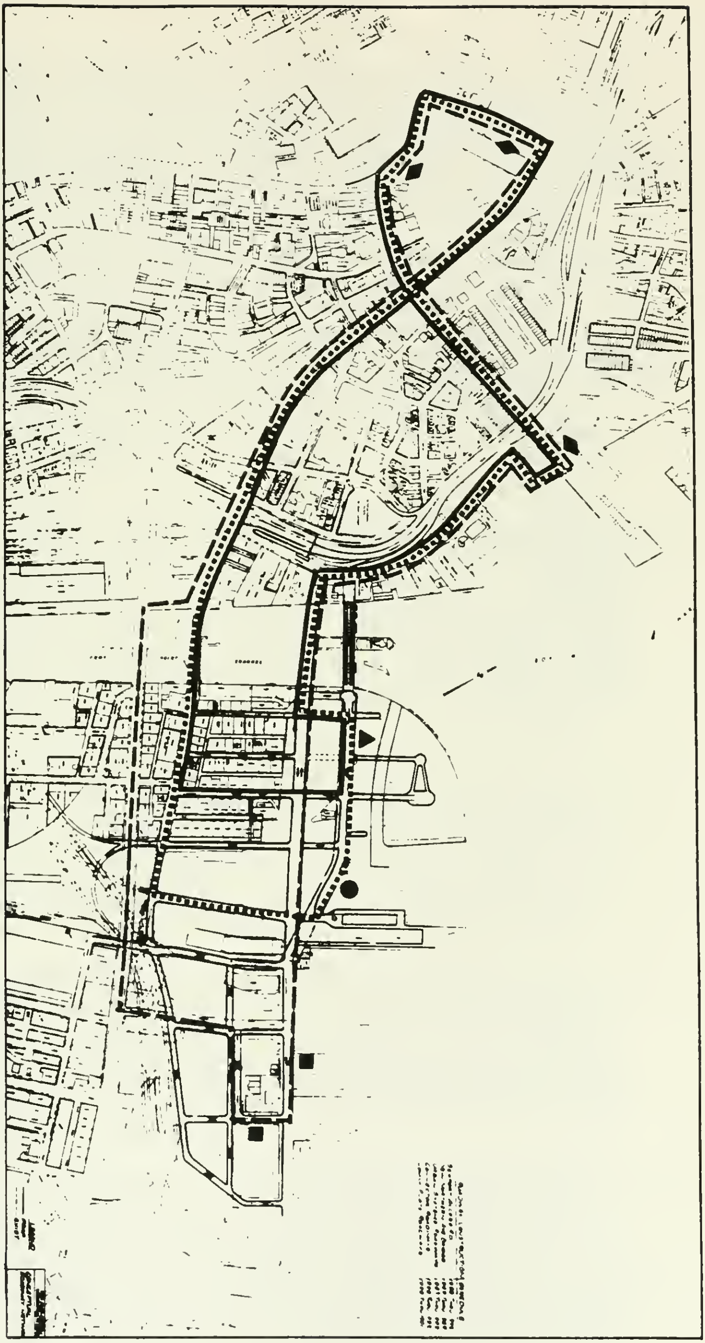


FIGURE 15 Peak Hour Government Center Shuttle Routes



— Western Area Route

········ Central Area Route

— — — Eastern Area Route

▲ Western Area Stop

● Central Area Stop

■ Eastern Area Stops

◆ Stops Served By All Routes

South Station shuttles serving the eastern area will turn east on Northern Avenue from the SAR Exit Road. They will stop once opposite Commonwealth Pier (under the viaduct), and once again immediately past D Street. They will return to the SAR via a ramp located near the intersection of Northern Avenue and Harbor Street.

Shuttles to Government Center will cross the Relocated Northern Avenue Bridge and turn right on Atlantic Avenue. They will stop at Aquarium Station and then proceed west on State and Court Streets to the Government Center MBTA station. From there, they will continue via Cambridge Street and Sudbury Street to the Haymarket shuttle stop at the corner of Sudbury and Congress Streets. Next, they will travel down Congress Street across Atlantic Avenue.

It should be noted that the Aquarium shuttle stop is primarily to allow shuttle passengers to transfer to the MBTA Blue Line. Transfers from the Blue Line would be more conveniently made at Government Center. Therefore, shuttles will stop at Aquarium only during the PM peak hour and the off-peak hours. During the AM peak hour, when the demand for transfers to the Blue Line is negligible, the shuttles will turn left from Atlantic Avenue onto State Street and proceed directly to Government Center.

Government Center shuttles returning to the eastern area will turn south on Dorchester Avenue, east on Summer Street, north on Viaduct, east on Ramp Street, north on D Street, and west on Northern Avenue to complete the loop. They will make two stops: on D Street at Commonwealth Flats, and on the north side of Northern Avenue between the Fish Pier and Commonwealth Pier.

Government Center shuttles serving the western area will follow Congress Street across the Fort Point Channel, turn north on Pittsburgh Street, west on Old Northern Avenue, south on Sleeper Street, and west on the New Northern Avenue Bridge. They will make one stop at the westernmost Fan Pier parcel, where a sheltered waiting area will be provided.

Government Center shuttles serving the central area will stay on Congress Street all the way to the SAR Exit Road. They will then proceed north to Pier 4, west on Old Northern Avenue, south on Sleeper Street and west on the New Northern Avenue Bridge. They will have one stop at the west half of the Pier 4 parcel on Old Northern Avenue, where a sheltered waiting area will be provided.

Cycle Times

Route cycle times are one determinant of fleet size, and hence the cost, of any fixed-route service. Cycle time has three components: round-trip travel time, dwell time at stops for boarding and alighting, and slack time, which is the padding built into the schedule to ensure reliable service despite variable travel and dwell times and traffic conditions.

Because reliability is critical to the success of the shuttle system, generous allowances were made for cycle times. Two minutes were allowed for dwell time at each stop. Round trip travel times were based on actual peak-hour runs on Atlantic Avenue, State Street, and Congress Street. To be conservative, the maximum observed travel time rather than the average time was used in the calculations. Additional travel time was allowed to account for future growth in traffic volumes. The 1995 Full Build volume capacity analysis completed for the study area intersections included shuttle bus volumes and their effects on operating conditions. Where appropriate, delays were calculated for congested intersections and added to travel times. Despite the use of maximum travel time, which arguably obviates the need for slack time, a ten percent additional slack time allowance was made on the Government Center shuttles. Since the South Station shuttles will operate mainly on roads which have not yet been built, and therefore cannot be sampled for travel time, conservative assumptions about travel speed were used. For example, 30 mph was projected for the HOV lanes on the Seaport Access Road.

Ridership Levels and Required Frequency

The shuttle system and suburban express bus system (discussed later) will together have adequate capacity to carry all the transit demand from the Fan Pier and Pier 4 Projects, and the other assumed background developments. No demand reduction was made for walking trips or ferry boat trips. During peak hours, when the suburban express buses are operating in South Boston, the Government Center shuttles will have sufficient capacity to serve passengers using the Green, Blue and Orange Lines, Haymarket express buses, and North Station commuter trains. The South Station shuttles will have enough capacity to carry passengers using the Red Line, South Station commuter rail lines, and express buses in the South Station area which serve suburban locations not likely to support direct service into the Northern Avenue area. Of the total peak-hour peak direction transit demand for the proposed projects and four nearby

background developments, 13 percent is projected to use the suburban express bus system, 34 percent is expected to use the South Station shuttles, and 53 percent is forecast to use the Government Center shuttles. These percentages are based on the 1982 Cordon Count for Downtown Boston.

The MBTA assumes 60 passengers per bus to plan peak hour service; however, the proposed shuttle system uses 54 (and a range of 50 to 58) passengers per bus in order to provide an extra degree of comfort and to reduce the potential for excessive dwell times caused by boarding delays. This results in the need for slightly more frequent service than would result from the MBTA planning standard.

Peak-hour route frequencies and fleet size requirements are derived in Table 37. The second column shows the expected number of peak-hour, peak-direction passenger trips using each shuttle route. Dividing each of these volumes by the target busload of 54 passengers provides an approximation of the number of vehicle trips needed per hour. Dividing 60 minutes by the number of required trips gives the approximate headway in minutes. The headway is then rounded off to the nearest whole minute above five minutes, or the nearest half-minute below five minutes. Typical headways in the PM peak hour are three minutes for the western area, four minutes for the central area, and six minutes for the eastern area. The number of vehicle trips required per hour is then adjusted to reflect the rounded headway value, after which the average passenger load is calculated.

Off-peak ridership is estimated as follows. The total bi-directional daily transit demand would be confined to 13 hours per weekday. (To the extent that demand falls outside that time period, some off-peak shuttle capacity will be unutilized.) Next, the total off-peak bi-directional transit demand was obtained by subtracting the bi-directional volumes of both peak hours. This figure is divided by 11, the number of off-peak hours, to arrive at an average hourly bi-directional demand, and the result is divided by two to very roughly estimate the volume in each direction. In the absence of any data to the contrary, it is also necessary to assume that during off-peak hours, when no suburban express buses would be serving the Northern Avenue area, the demand for the South Station shuttle and the Government Center shuttle would be equal. Finally, because these last two assumptions lead to an under-estimation of the needed off-peak capacity, the resultant demand estimate was increased by 20 percent to be conservative.

TABLE 37
Peak Hour Shuttle System Summary*

Route	Estimated Passenger Trips	Required Vehicle Trips	Headway in Minutes**	Average Passenger Load***	Cycle Time (minutes)	Cycle Time Divided by Headway****	Buses Needed
AM PEAK HOUR							
West Area							
From South Station	842	15.0	4.0	56	16	4.0	4
From Government Center	1,297	24.0	2.5	54	25	10.0	10
Central Area							
From South Station	623	12.0	5.0	52	14	2.8	3
From Government Center	959	17.0	3.5	56	28	8.0	8
East Area							
From South Station	471	8.5	7.0	55	17	2.4	3
From Government Center	724	13.0	4.5	56	30	6.7	7
AM Total	4,916						35
PM PEAK HOUR							
West Area							
To South Station	898	17.0	3.5	53	16	4.6	5
To Government Center	1,382	24.0	2.5	58	35	14.0	14
Central Area							
To South Station	646	12.0	5.0	54	14	2.8	3
To Government Center	994	20.0	3.0	50	38	12.7	13
East Area							
To South Station	449	8.5	7.0	53	17	2.4	3
To Government Center	691	12.0	5.0	58	40	8.0	8
PM Total	5,060						46

TOTAL BUS TRIPS PER HOUR	AM	PM
South Station	35.5	37.5
Government Center	54.0	56.0

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* South Station buses on Seaport Access Road; Government Center buses on city streets.

** 60 minutes divided by required vehicle trips.

*** Passenger trips divided by required vehicle trips.

**** Cycle time divided by headway in minutes.

Using these demand estimates, frequencies and vehicle requirements are calculated for the off-peak period. In 1995, the western area has enough demand to require 10-minute off-peak headways, the central area can justify only 20-minute headways, and the eastern area can only support 30-minute headways during off-peak hours. Therefore, the central and eastern areas were combined to form a single off-peak South Station route and a single Government Center route, each of which can support 10-minute headways. The frequencies and fleet size calculations for the off-peak period are presented in Table 38, and the routings for the combined routes are shown in Figures 16 and 17.

Fleet Size Requirements

The number of buses needed is equal to the cycle time divided by the headway, rounded up to the next whole number. As shown in Tables 37 and 38, the shuttle system requires 35 buses in the AM peak hour, 46 buses in the PM peak hour, and 11 buses during the off-peak period.

Cost

Based on information from two bus operators (Medical Area Services Corporation and Hudson Bus Lines), the shuttle service operated under contract by a private provider would cost about $2.7 million annually in 1986 dollars. This cost is based on 250 service days per year, and includes capital, operating, maintenance, and administrative expenses, except for fare-collection costs. It is proposed that shuttle fares be collected at curbside rather than on board. The unit costs are $37 per vehicle-hour, with a 2.5 hour minimum each time a vehicle is used.

Of this annual cost (which is based on service levels for estimated 1995 development), about $1.7 million is likely to be attributable to the Fan pier and Pier 4 Developments, and about $1.0 million to the four background developments. The apportionment is done separately for peak and off-peak periods and is based on peak-direction ridership during each period.

Temporary Pre-SAR South Station Routes

The shuttle buses are proposed to begin operation before 1995, since some of the proposed Fan Pier and Pier 4 buildings will be completed in the earlier years. Temporary shuttle routes prior to opening of the Seaport Access Road have been designed to link the projects and other developments to South Station (see Figure 18).

TABLE 38
Off-Peak Shuttle System Summary

Route	Estimated Passenger Trips	Required Vehicle Trips	Headway in Minutes**	Average Passenger Load***	Cycle Time (minutes)	Cycle Time Divided by Headway****	Buses Needed
West Area							
From South Station	314	6	10	52	16	1.6	2
From Government Center	314	6	10	52	30	3.0	3
Central/East Area							
From South Station	272	6	10	45	19	1.9	2
From Government Center	272	6	10	45	38	3.8	4
							11

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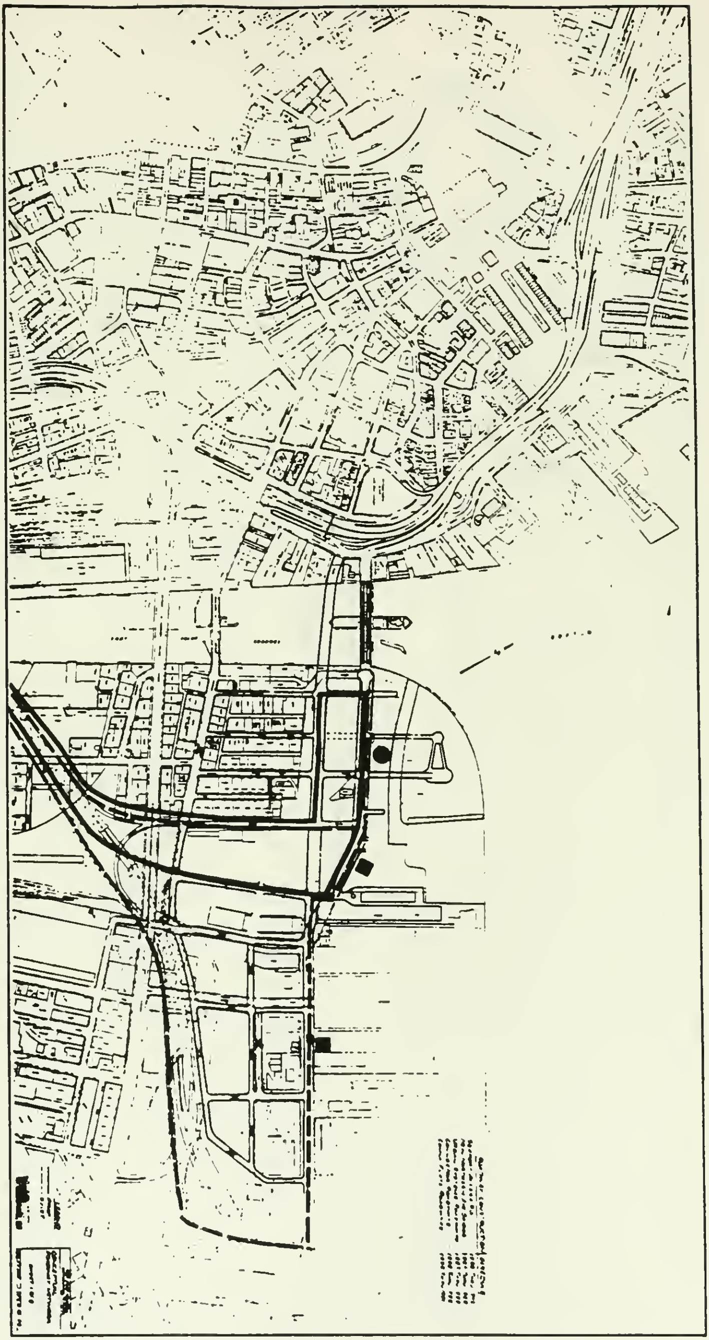
* South Station buses on Seaport Access Road; Government Center buses on city streets.

** 60 minutes divided by required vehicle trips.

*** Passenger trips divided by required vehicle trips.

**** Cycle time divided by headway in minutes.

FIGURE 16
Off-Peak
South Station
Shuttle
Routes



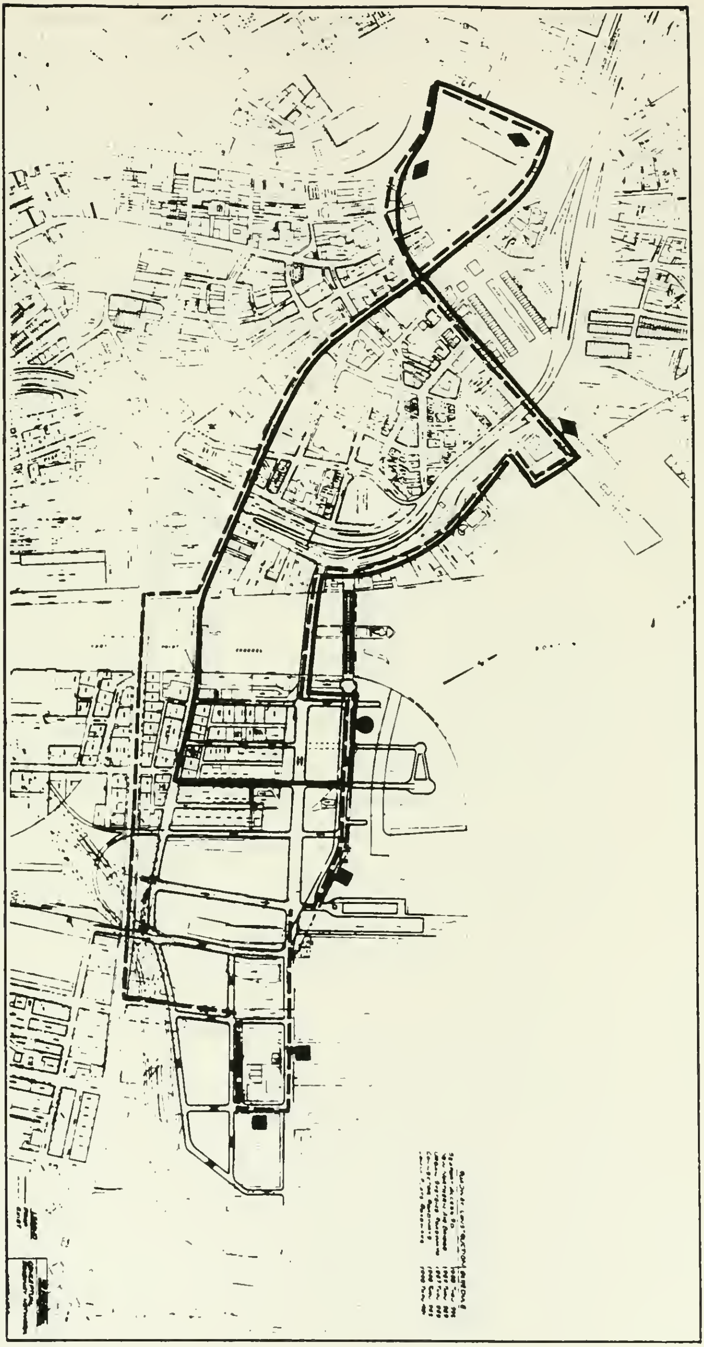
— Western Area Route

- - - Central Eastern Area Route

● Western Area Stop

■ Central/Eastern Area Stops

FIGURE 17
Off-Peak
Government
Center
Shuttle
Routes



—— Western Area Route

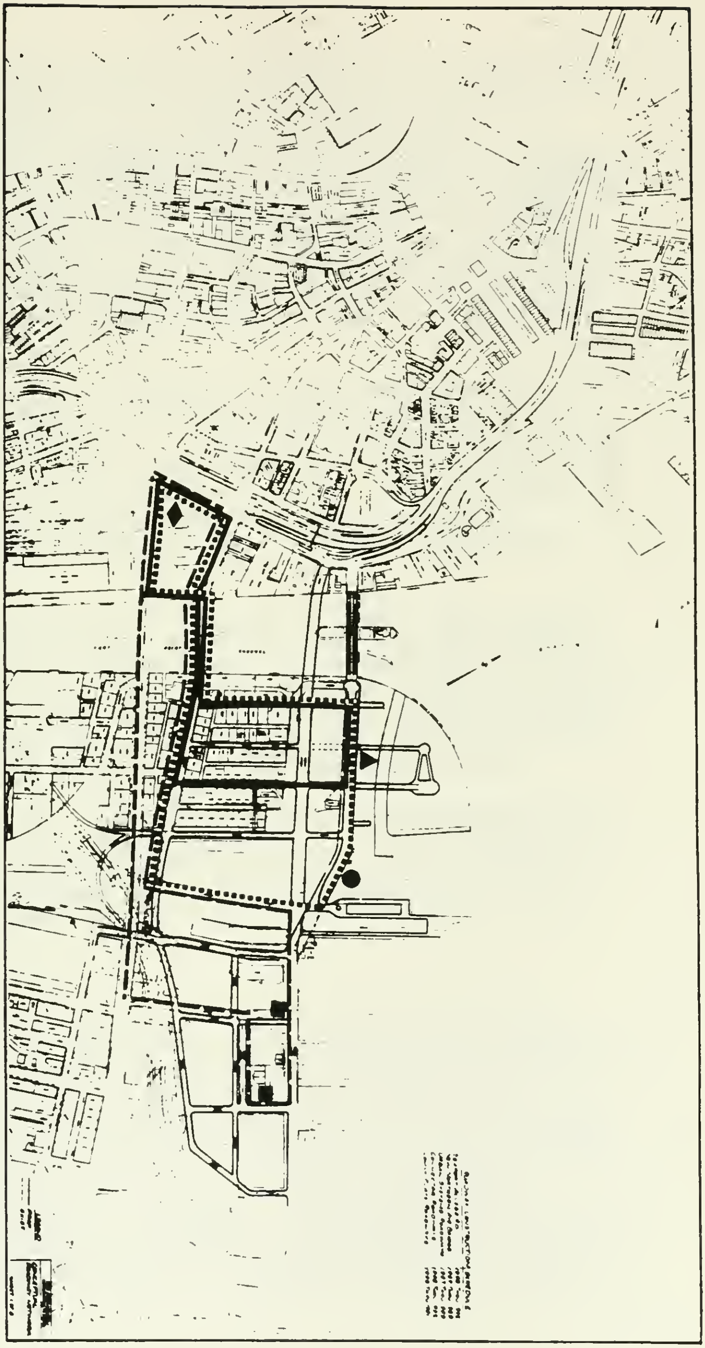
— — — Central/ Eastern Area Route

● Western Area Stop

■ Central/ Eastern Area Stops

◆ Stops Served by Both Routes

FIGURE 18
Temporary
South Station
Shuttle
Routes



─── Western Area Route

•••••••• Central Area Route

— — — Eastern Area Route

▲ Western Area Stop

● Central Area Stop

■ Eastern Area Stops

◆ Stops Served By All Routes

From the western and central areas, shuttles will travel west on Old Northern Avenue, south on Sleeper Street, west across the Congress Street Bridge, south on Dorchester Avenue, and west on Summer Street. After stopping to discharge and collect passengers on Summer Street, they will turn north on Atlantic Avenue and east on Congress Street. Western area buses will complete the loop by turning north on Sleeper Street and west on Old Northern Avenue, while central area buses will use the advance-construction SAR Exit Road (discussed under New Roadway Capacity below) to return to Old Northern Avenue.

Eastern area shuttles will travel east from Commonwealth Pier and turn right on D Street, stopping at Commonwealth Flats. They will then proceed west on Ramp Street, south on the Viaduct, and west on Summer Street to their stop near South Station. They will return via Atlantic Avenue, Congress Street, the advance-construction SAR Exit Road, and Relocated Northern Avenue.

All shuttle buses will stop on Summer Street opposite South Station in a lane currently used for on-street parking. A separate stop will be set aside for each of the three shuttle routes. The westernmost bus stop will be set back 100 feet from the Atlantic Avenue intersection so that stationary buses will not prevent general traffic from using the curb lane to turn right.

Peak hour frequencies and fleet size requirements are derived in Table 39. Compared to Table 37 for the basic shuttle system presented earlier, the fleet size is nearly identical; one more bus is required in the AM peak hour, and two more in the PM peak hour.

Implementation

The developers have indicated their willingness to provide planning assistance for operation of the shuttle bus system as well as physical on-site improvements to ensure high quality boarding and alighting areas. In accordance with EOTC's philosophy that public transportation be provided by public agencies, the developers will work with the MBTA to ensure that operation of the shuttle bus occurs as soon as the first project buildings are completed. The developers have requested assistance from the MBTA for planning and operating the shuttle bus system. (See letter to MBTA in Appendix.)

TABLE 39
Temporary Shuttle System Summary*

Route	Estimated Passenger Trips	Required Vehicle Trips	Headway in Minutes**	Average Passenger Load***	Cycle Time (minutes)	Cycle Time Divided by Headway****	Buses Needed
AM PEAK HOUR							
West Area							
From South Station	842	15.0	4.0	56	14	3.5	4
From Government Center	1,297	24.0	2.5	54	25	10.0	10
Central Area							
From South Station	623	12.0	5.0	52	17	3.4	4
From Government Center	959	17.0	3.5	56	28	8.0	8
East Area							
From South Station	471	8.5	7.0	55	21	3.0	3
From Government Center	724	13.0	4.5	56	30	6.7	7
AM Total	4,916						36
PM PEAK HOUR							
West Area							
To South Station	898	17.0	3.5	53	16	4.6	5
To Government Center	1,382	24.0	2.5	58	35	14.0	14
Central Area							
To South Station	646	12.0	5.0	54	19	3.8	4
To Government Center	994	20.0	3.0	50	38	12.7	13
East Area							
To South Station	449	8.5	7.0	53	23	3.3	4
To Government Center	691	12.0	5.0	58	40	8.0	8
PM Total	5,060						48

TOTAL BUS TRIPS PER HOUR	AM	PM
South Station	35.5	37.5
Government Center	54.0	56.0

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* All buses on city streets.

** 60 minutes divided by required vehicle trips.

*** Passenger trips divided by required vehicle trips.

**** Cycle time divided by headway in minutes.

Long-Term Alternatives to the Proposed Shuttle Bus System

Several alternative transit links between South Boston and Downtown are being evaluated by other South Boston developers and public agencies. This Access Plan focuses on a shuttle bus system, supplemented by a system of non-stop bus service to suburban locations. A fixed-guideway monorail system is expected to be analyzed in the forthcoming EIR for the World Trade Center's proposed expansion on the Commonwealth Flats. Various rapid transit solutions have also been proposed including the rerouting of some Red Line trains through the development area, or the rerouting of some inbound Blue Line trains to South Station via Logan Airport and South Boston. Exclusive busways are another favored alternative, since they provide a very high ratio of person-carrying capacity to cost and environmental impact. It has been pointed out that the Lincoln Tunnel contra-flow bus lane in New York City carries more peak hour passengers than the MBTA Red Line.

The shuttle bus system is favored by the Fan Pier and Pier 4 developers and is proposed for two reasons: it can carry the projected 1995 (and beyond) transit volumes from Fan Pier and Pier 4 and all assumed background development effectively and efficiently on the 1995 road network, and it can be operational within six months of its selection. More elaborate transit alternatives have other potential advantages in the long run. The long-term buildout of the Northern Avenue area suggests the need to begin planning for transit alternatives with exclusive rights-of-way. In the long term, such systems will provide greater service capacity while freeing up roadways for vehicular use and they will show increasingly attractive cost-benefit ratios.

Recognizing that the best 1995 solution for Northern Avenue area transit is not necessarily the best long-term solution, the developers have agreed to ensure that design decisions they make in the short-run will not preclude construction of a fixed-guideway transit link in the long run. In addition, they have planned the placement of utilities for their sites so as to preserve the potential for a below-grade corridor for exclusive transit use.

Suburban Express Bus System

In the Northern Avenue area, suburban express buses will most likely follow exactly the same route as the South Station/western area shuttles, but they will stop on Old Northern Avenue at the Fan Pier parcel east of

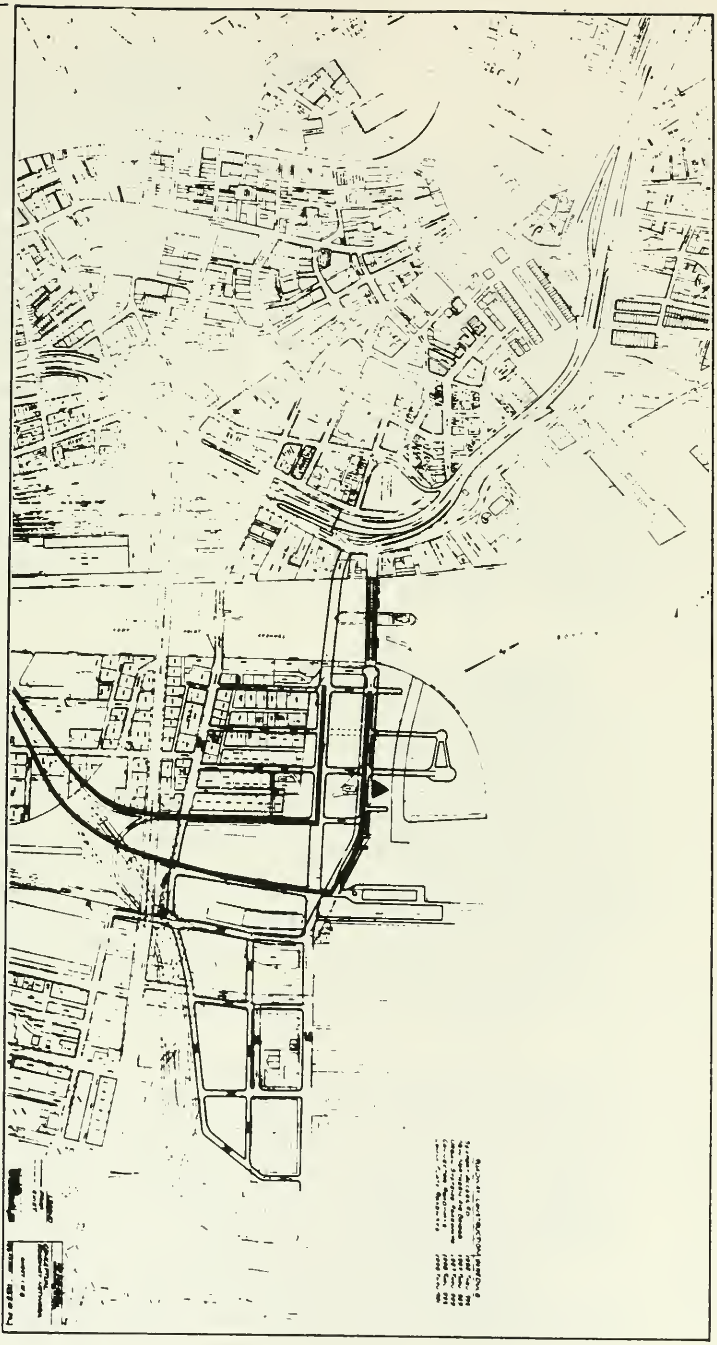
Pittsburgh Street, where a sheltered waiting area exclusively for suburban buses will be provided. The route and stop are shown in Figure 19. This location is very convenient for Fan Pier, Pier 4, and CC&F. It is also within a one-half mile walk of the eastern area developments. However, for the added convenience of passengers going to those eastern area developments, it is suggested that an off-street bus terminal be provided on the east side of the SAR Exit Road just south of Relocated Northern Avenue.

Suburban express buses have successfully captured nearly 20 percent of Downtown transit commuters, most of whom work within a short walk of many transit options. This track record bodes well for their potential to attract commuters who work in the Northern Avenue development area, where they will hold a strong relative advantage over the rapid transit option. Given the excellent highway access via the HOV lanes of the Seaport Access Road, it is likely that MBTA buses traveling non-stop to the Northern Avenue area from Newton Corner or Riverside would attract and retain riders and meet economic performance standards. Likewise, private carrier routes going non-stop to the development area from South Shore points such as the Rockland Park-and-Ride lot could be profitable. Such a route would be even more attractive if the South Boston Bypass Road is opened as an HOV facility as recommended elsewhere in this mitigation section (see New Roadway Capacity below).

Recognizing, however, that many Downtown express commuter bus routes serve communities too small to support non-stop service to the Northern Avenue area, one cannot expect the express bus mode share in this area to match that observed Downtown. Based on existing ridership figures for the high-potential routes (Rockland, Riverside, and Newton Corner), a conservative estimate of 670 passengers on 15 buses is projected. An additional 80 passengers are projected to commute from the North Shore through the Third Harbor Tunnel on MBTA buses that travel to and from South Station, with a brief stop in the Northern Avenue development area.

The above projections led to the forecast of a 13 percent mode share for express buses, which in turn was used to estimate the capacity needed on the shuttles. However, it should be noted that if the express buses are less successful than forecast, the shuttle system can handle the extra passengers by bringing in additional buses. Likewise, in case the express buses are more successful, the waiting area at the Fan Pier parcel east of Pittsburgh Street can accommodate at least twice the projected number of buses.

FIGURE 19
Suburban
Express
Bus Route



TRAFFIC OPERATIONS IMPROVEMENTS

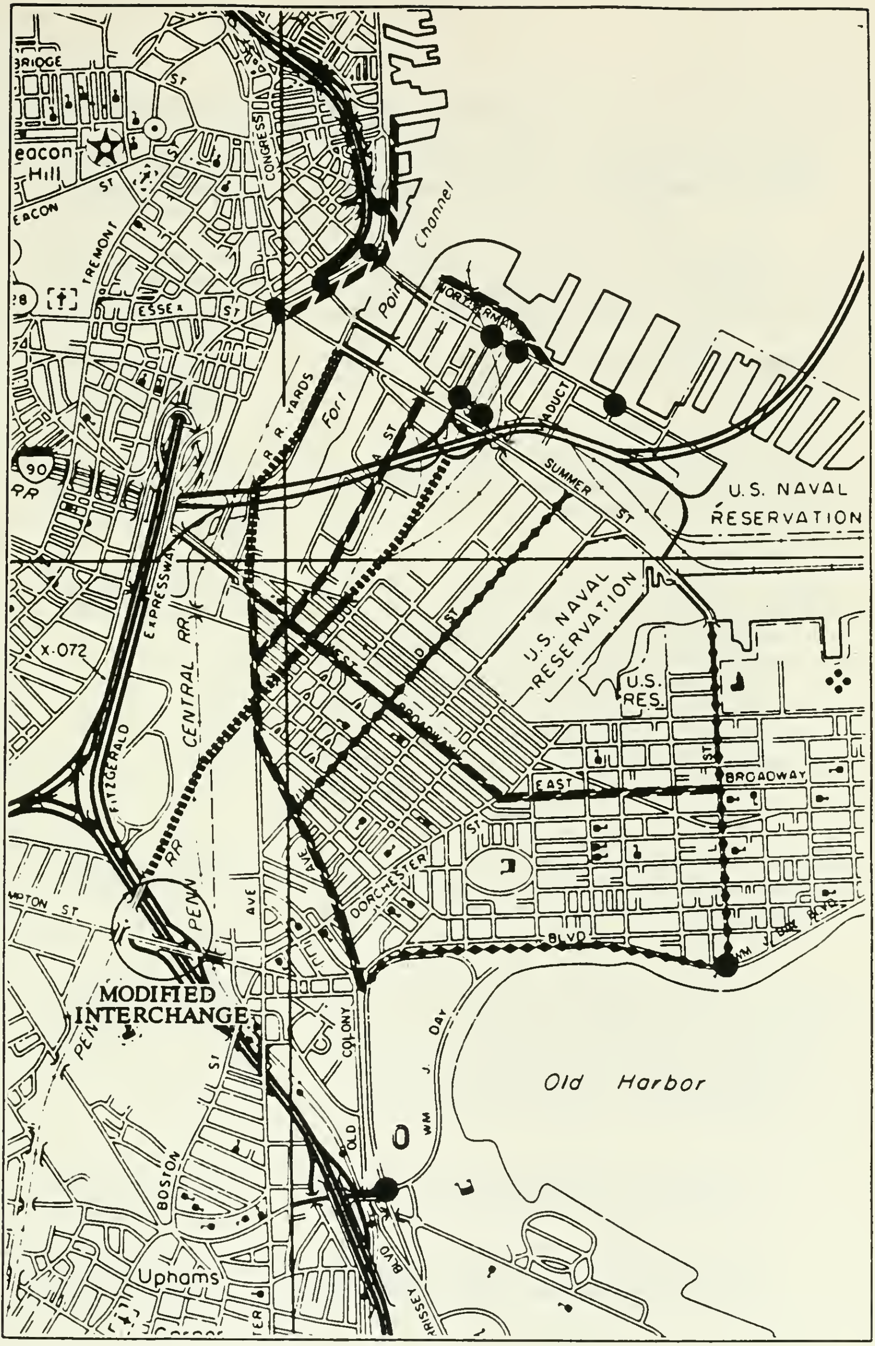
Intersection-Related Improvements

As noted in the Probable Project Impacts section, several analysis locations exhibit capacity deficiencies in the 1995 analysis year. Most of these are shown to be deficient even under 1995 No-Build conditions. The following discussion focuses on traffic operations improvements that are proposed at the 11 locations where Level of Service "E" or "F" conditions (V/C ratios of 0.91 or higher) prevail under 1995 Build conditions in one or both peak hours. Only two of the 11 intersections have deficient levels of service as a result of the projects themselves, four are deficient under No-Build conditions and will be impacted by the projects, and the remaining five are deficient under No-Build but will be affected by the projects only minimally or not at all. This indicates that most of the future traffic growth anticipated in the study area will cause deficiencies whether or not the Fan Pier and Pier 4 Projects are built. Figure 20 shows the 11 locations requiring mitigation.

The types of measures included in this category are basically those that can be implemented relatively easily, quickly, and inexpensively. They attempt to make maximum use of already existing or planned facilities without the need for major reconstruction or redesign. The recommended measures are summarized in Table 40 and discussed below. The implementation of these measures would be the responsibility of the Boston Transportation Department (BTD). The developers have cooperated with the city in providing planning services for intersection improvements as part of the development of this Plan. The program will continue to evolve as part of the South Boston Transportation Study (see below) and will be designed so as to be consistent with known objectives of the South Boston community.

It should be noted that the mitigated volume-to-capacity (V/C) ratios cited in the location summaries below result not only from the specific intersection improvements proposed, but also from the other arterial- and system-type measures noted in later sections. These result in significant traffic diversions from certain routes to others. Therefore, the mitigation analysis involved two steps: computing V/C ratios first with only the traffic diversions from route-related mitigation, then adding the intersection-specific mitigation measures. The V/C ratios presented are the end result of the two-step process.

FIGURE 20
Traffic
Mitigation
Summary



●
Intersection
Mitigation
Locations

▬ ▬ ▬
Arterial
Related
Improvements

▮▮▮▮▮▮▮▮▮▮
New Roadway
Capacity

◆◆◆◆◆
Traffic-
Restrained
Roadways

TABLE 40
Intersection-Related

Intersection	Mitigation Measures
Relocated Northern Avenue/Seaport Access Road Entrance	Parking restriction on Relocated Northern Avenue westbound in the PM peak; two left-turn lanes into entrance road.
Relocated Northern Avenue/Seaport Access Road Exit	Fourth lane on exit road for right-turn only parking restriction on Relocated Northern Avenue westbound in the PM peak.
Congress Street/ Seaport Access Road Entrance	Third lane eastbound on Congress Street for right turn only.
Congress Street/ Seaport Access Road Exit Exit.	Third lane northbound on Seaport Access Road Exit for left turn only; channelized free right turn on westbound Seaport Access Road.
Atlantic Avenue/ Summer Street	One-way northbound flow on Atlantic Avenue south of Summer Street; AM and PM peak hour parking restrictions on Atlantic Avenue from Summer Street to State Street (see Arterial-Related Improvements) and on Summer Street westbound from Fort Point Channel to Atlantic Avenue; stripe center lane on Summer Street eastbound approach as shared through/left and modify signal phasing accordingly.
Atlantic Avenue/ Congress Street	AM and PM peak hour parking restrictions on Congress Street westbound from Fort Point Channel to Atlantic Avenue and on Atlantic Avenue from Summer Street to State Street.
Atlantic Avenue/ Relocated Northern Avenue	AM and PM peak hour parking restrictions on Atlantic Avenue from Summer Street to State Street; stripe 100-foot approach on Artery exit ramp for two-lane operation; channelize right-turn onto Relocated Northern Avenue and run concurrent with Artery exit ramp.
Atlantic Avenue/ High Street	No operational improvement feasible; requires Depressed Central Artery.
Northern Avenue/ Ramp Street	Signalization; double left-turn lane from Ramp Street to Northern Avenue.

TABLE 40 (Continued)	Intersection	Mitigation Measures
Intersection-Related	L Street/Day Boulevard	Eliminate commuter traffic by restricting access to Day Boulevard (see Arterial-Related Improvements and South Boston Transportation Study).
	Kosciuszko Circle	Traffic diversion to Southeast Expressway due to South Boston traffic management (see South Boston Transportation Study).

Relocated Northern Avenue/Seaport Access Road Entrance. The 1995 PM peak hour Build V/C ratio would be at 1.21 if no improvements were made. This can be reduced to 0.91 with the addition of a third through lane in the westbound direction (by means of a peak period parking prohibition) and dual left-turn lanes into the Seaport Access Road Entrance.

Relocated Northern Avenue/Seaport Access Road Exit. This location requires a fourth approach lane on the exit road for the heavy right turn movement, and a PM peak hour parking restriction on Relocated Northern Avenue westbound. This would reduce the AM and PM V/C ratios from 0.89 and 0.95, respectively, to 0.84 and 0.67, respectively.

Congress Street/Seaport Access Road Entrance. The deficiency at this location occurs in the PM, with a V/C ratio of 0.94. Improvements can be made by adding a third approach lane eastbound on Congress Street for right-turn only into the Seaport Access Road Entrance. The V/C ratio would decline to 0.89.

Congress Street/Seaport Access Road Exit. The AM peak hour represents this location's problem, with a V/C ratio of 1.10. Mitigation measures include addition of a third lane northbound from the Seaport Access Road Exit to provide an exclusive left turn into Congress Street, and conversion of the right-most lane on the westbound approach to a free-flow right turn by installation of a channelizing island. These changes result in a decline in the V/C ratio to 0.77.

Atlantic Avenue/Summer Street. This location is heavily affected by pedestrian traffic from South Station. Pedestrians utilize about 30 percent of the available green time. It should be noted, however, that due to their location, the Fan Pier and Pier 4 Projects will not add appreciable pedestrian traffic across Atlantic

Avenue from South Station. If there were normal pedestrian traffic volumes at this intersection, it would operate in the acceptable range instead of with a V/C ratio of 1.05 in the AM peak and 1.32 in the PM peak. However, these ratios can be improved with the following measures:

- Atlantic Avenue south of Summer Street is scheduled to be converted to one-way operation northbound. This will allow an additional through lane on the approach to Summer Street.
- To take full advantage of this extra lane, restrict parking on the east side of Atlantic Avenue from Summer Street to State Street during both the AM and PM peak periods (see Arterial-Related Improvements).
- Restrict parking on the westbound side of Summer Street from Dorchester Avenue to Atlantic Avenue to obtain an extra lane for right turns.
- On the Summer Street eastbound approach, stripe the center lane for shared throughs and lefts, and modify the signal phasing accordingly.

These measures would reduce the V/C ratios from those cited above to 0.85 in the AM and 0.89 in the PM. Further improvements will be achieved by providing another subway portal on the northwest corner of the intersection (adjacent to the Trailways terminal) to reduce the number of surface pedestrian crossings. This improvement is currently under construction.

Atlantic Avenue/Congress Street. A prohibition on peak hour parking on both Atlantic Avenue (Summer Street to State Street) and Congress Street (Fort Point Channel to Atlantic Avenue on the westbound side) is required in both the AM and PM peak periods, particularly the former. This measure would reduce the more critical AM V/C ratio from 1.32 to 1.13 by allowing an extra through lane on Atlantic Avenue and an additional lane for right turns on Congress Street. The PM peak hour V/C ratio would decline from 1.11 to 0.94.

Atlantic Avenue/Relocated Northern Avenue. The AM and PM peak hour parking restriction on Atlantic Avenue proposed earlier would tend to help operations at this location (1.32 V/C ratio in the more critical AM peak hour reduced to 0.94, and 1.13 to 0.92 in the PM). In addition, the proposed design should be modified to provide a channelizing island permitting right turns from Atlantic Avenue simultaneous with Artery off-ramp maneuvers to Relocated Northern Avenue. This should be

done in conjunction with striping the Artery exit ramp for two-lane operation for 100 feet on the approach to Atlantic Avenue.

Atlantic Avenue/High Street. Improvements can only be achieved through extensive reconstruction because full use is already made of all available lanes under existing and future analysis scenarios. The full I-90/I-93 project, specifically the Depressed Central Artery, is required to ameliorate conditions at this location.

Northern Avenue/Ramp Street. This location should be signalized with a double left-turn lane on Ramp Street. The projected operation without signalization indicates that no reserve capacity would be available. However, with signalization, the V/C ratio would be 0.37 in the PM peak.

L Street/Day Boulevard. This location will be improved to LOS "A" with the reduction or elimination of commuter traffic on Day Boulevard and L Street as discussed in a subsequent section. Therefore, no other improvements are proposed for this location.

Kosciuszko Circle. Due to geometric restrictions, no operational improvement is possible. Signalization would only result in increased congestion and delay. However, this location would benefit directly from the traffic management measures discussed in the section on Arterial-Related Improvements, such as elimination of commuter traffic on certain roadways in South Boston. This would cause diversion of some traffic back to the Southeast Expressway resulting in improved operation at Kosciuszko Circle, particularly if the South Boston Bypass Road is built (see the section on New Roadway Capacity below). The level of service would improve from "F" to "D/E" in the critical AM peak hour.

Arterial-Related Improvements

The impact analysis identified several capacity and safety-related deficiencies associated with the morning and evening peak hours along neighborhood streets which have been used as commuter-oriented arterials through South Boston. These existing problems may be remedied, at least in part, by means of the measures which are identified below. It should be noted, however, that since these arterials pass through or near the residential area of South Boston, any measures taken to improve or retard the flow of vehicular traffic on these streets must take into consideration the wishes and concerns of neighborhood residents. These locations and others will be studied in more detail in the city's South Boston

Transportation Study. However, previous meetings and discussions with South Boston residents have indicated a preference for reducing or eliminating commuter traffic on streets which are primarily residential. Therefore, this has been accepted as the objective pending further discussion as the transportation study proceeds. The measures which follow that relate to the South Boston community should be regarded as preliminary proposals. Responsibility for implementation will rest with the BTD. The principal arterial locations requiring mitigation are shown in Figure 20 presented earlier.

L Street, D Street, and Day Boulevard. One of the principal objectives of the South Boston community is the reduction or elimination of commuter traffic along residential or recreational roadways, particularly L Street, D Street, and Day Boulevard. The Metropolitan District Commission (MDC), which has responsibility for Day Boulevard, also has expressed interest in relieving the facility of its commuter traffic. Therefore, it is assumed that means can and will be found (either in the form of physical barriers, one-way street segments, police monitoring, resident stickers, etc.) to take commuters off these streets and force them onto more appropriate commuter-oriented routes. All of these suggestions should be included in detailed studies as part of the South Boston Transportation Study being conducted by the City of Boston. It has been assumed that the routes accepting additional commuter traffic will include Old Colony Avenue, Dorchester Avenue and an upgraded A Street (see below). However, since these streets have limited capacity to accept all of the diverted commuter traffic, it has also been assumed that substantial new capacity should be provided to spread the demand. These capacity improvements are described in the subsequent section on "New Roadway Capacity," and include the South Boston Bypass Road and the reopening of the closed segment of Dorchester Avenue adjacent to the South Boston Postal Annex.

The net effects of restricting commuter traffic from Day Boulevard, L Street, and D Street, and providing new roadway capacity on the South Boston Bypass Road and a new Dorchester Avenue are shown in Figure 21. Changes in roadway volumes are shown for the inbound direction in the morning peak hour and the outbound direction in the evening peak hour The impact of these diversions in terms of level of service and volume-to-capacity ratio is shown in the Mitigation Analysis Summary at the end of this chapter.

During the morning peak hour, 726 commuter trips are diverted from Day Boulevard and L Street, and 227

commuter trips are diverted from D Street. These trips are diverted to the Southeast Expressway north of Columbia Road, Dorchester Avenue, and the South Boston Bypass Road. In addition, the South Boston Bypass Road will attract truck and high occupancy vehicle (HOV) traffic from the Southeast Expressway and from D Street. The net result of these AM peak hour diversions is that the Southeast Expressway will lose 103 trips, Dorchester Avenue will gain 385 trips, A Street will gain 132 trips, and the Bypass Road will gain 539 trips in the peak inbound direction. A total of 1,056 trips is diverted from L Street, D Street, and the Southeast Expressway to A Street, Dorchester Avenue, and the Bypass Road.

In the evening peak hour, similar outbound diversions are shown. L Street would lose 595 commuter trips, D Street would lose 184 commuter trips, and the Southeast Expressway would see a reduction of 238 trips. This diverted traffic would use A Street, Dorchester Avenue, and the Bypass Road. A Street would carry 57 additional trips, Dorchester Avenue would carry 313 additional trips, and the Bypass Road would carry an additional 547 trips in the peak outbound direction. The total diversion in the evening is 917 trips from L Street, D Street and the Southeast Expressway to D Street, Dorchester Avenue, and the Bypass Road.

A Street. A Street will require substantial upgrading if it is to serve as one of the principal alternate routes should L Street, D Street, and Day Boulevard be closed to commuter traffic. Effective improvements would include upgrading the signal equipment at West Broadway, West Fourth Street, and Dorchester Avenue/West Fifth Street and coordinating the signal controllers to permit smoother traffic flow through these closely-spaced intersections. Signal timing should consider the heavy truck traffic along this section of A Street (which is part of the designated truck route through South Boston), but should also include appropriate pedestrian intervals. Consideration should be given to restricting heavy commercial vehicles to non-peak hours to provide more capacity for commuters prior to the availability of the South Boston Bypass Road, which should ultimately serve as an HOV and truck facility when constructed. Repaving the entire length of A Street would also be beneficial, and parking prohibitions should also be instituted throughout, at least during the peak hours. Loading/unloading activity should either be relocated off-street (preferably) or at least prohibited during peak commuter hours (see subsequent section on Areawide Commercial Vehicle Restrictions).

Old Northern and Relocated Northern Avenues. The project developers will continue the on-going public/private sector consultation process. They have developed a design concept for Old Northern Avenue and are providing input for the design of Relocated Northern Avenue. The developers will design and construct streetscape improvements on the north side of Old Northern Avenue, which will include a four-lane cross-section featuring a curb bus lane serving the Fan Pier and Pier 4 Projects and future Cabot, Cabot & Forbes development. The original design included two lanes in each direction between Sleeper Street and the Seaport Access Road (SAR) Entrance Road, with a three-lane, one-way westbound design between the SAR Exit and Entrance Roads. As a mitigation measure, this configuration has been modified to include three lanes westbound (including the bus lane) and one lane eastbound throughout to provide improved traffic flow and better vehicular interchange between the Fan Pier and Pier 4 Projects. The project developers will also provide streetscape improvements, including ample sidewalk elements, and bus stop waiting area locations integrated with facade setbacks, arcades, and weather protection at project buildings.

Relocated Northern Avenue, which is currently being designed by the City, is to include two through lanes in each direction with turn lanes added at key intersections and curb parking on both sides. It is proposed that parking be prohibited in the north side parking lane during the afternoon peak period to obtain a third travel lane westbound. The prohibition would extend from east of the Seaport Access Road Exit to Sleeper Street.

Old Colony Avenue/Dorchester Avenue. The portion of Old Colony Avenue between Columbia Park and Dorchester Avenue should be considered for a parking prohibition during the AM and PM peak periods to allow three-lane operation. The section of Dorchester Avenue between Old Colony Avenue and West Broadway should be regraded and repaved to eliminate the uneven roadway surface in the northbound direction. Consideration should be given to a minor widening on the northbound side to straighten the curve somewhat. Signal timing should be checked for compatibility with traffic flows at all signalized intersections along this route, particularly in the PM peak period.

Atlantic Avenue. Parking is currently permitted along Atlantic Avenue between South Station and State Street. The intersections at Summer Street, Congress Street, and Relocated Northern Avenue will operate at deficient

levels in 1995. All locations would have improved V/C ratios with the restriction of parking and provision of an additional travel lane in the peak hours. In addition, operations between Northern Avenue and State Street would benefit from the provision of an additional travel lane, particularly for the proposed shuttle bus route between the project area and Government Center. As was successfully done by the BTD with Congress Street, all peak hour parking along Atlantic Avenue from Summer Street to State Street should be restricted and an additional travel lane should be provided. State Street is proposed as the northern limit of the parking restriction because it is the location where the shuttle bus would turn off Atlantic Avenue and it has been identified by the city, along with Atlantic Avenue, as a future traffic-management street similar to Congress Street.

East and West Broadway. The major problem along most of this roadway west of L Street is double-parking which severely restricts the flow of traffic and results in congestion, delay, and an unsafe condition. The short-term parking limit along both sides of Broadway should be enforced to free these spaces for additional parkers. Double-parking should be eliminated through strict enforcement.

Designated Truck Route. To alleviate truck traffic through the heart of the South Boston residential area, the city has designated a truck route along mostly commercial/industrial streets between the Southeast Expressway and the industrial areas of South Boston. The route runs along portions of Southampton Street, Dorchester Avenue, A Street, West Broadway, C Street, and First Street (West and East). To encourage the use of this route by commercial vehicles and thereby reduce truck traffic through the residential portions of South Boston, the following measures are recommended:

- Additional and clearer signing of the truck route, beginning at the Southeast Expressway.
- Increased enforcement of no-parking restrictions along the route.
- Elimination of on-street truck loading.
- Additional signing along residential streets prohibited to trucks.
- Increased enforcement along no-truck routes.

- Improvement of the West First Street/B Street intersection for truck movements by widening sharp corners and improving the pavement surface.

- Implement the improvements now under design by the MBTA for the West Broadway/Dorchester Avenue intersection.

System-Related Improvements

Certain measures which relate to the entire study area rather than to individual intersections or streets include the following items, responsibility for which will rest with the BTD.

Traffic Signal System Optimization. It has been demonstrated that one of the most effective ways to improve traffic flow on an areawide basis is to improve the traffic signal system. Therefore, a comprehensive analysis of the existing signal system in the South Boston area is recommended. The Boston Transportation Department is in the process of upgrading many of its signals to an advanced computer-based system using real-time detection of actual traffic conditions on selected links. This should include the South Boston subarea. The upgraded system can be analyzed for signal timing effectiveness using a computer model such as TRANSYT-7F. Such improvements have been shown to improve speed and travel time by 8 to 12 percent.

Such an analysis may show that a reallocation of green time at certain locations is possible within the context of overall network control. Strategic shifts of current (or future) underutilized green time would further optimize vehicle flow and reduce queue lengths and congestion.

Enforcement. With the city's current computerized traffic violation program and more widespread use of towing and the "Denver Boot" by the BTD, the city is stepping up its enforcement of parking regulations. Vigorous enforcement can provide the "extra capacity" that is already built into the roadway system, but which goes unused because of illegal parking. It is proposed that a concentrated effort be continued to insure that more of this capacity is available for peak period use. In particular, elimination of double parking on Broadway, illegal parking activity along the designated truck route, illegal parking in lanes designated for through traffic during peak commuting hours, and unwarranted truck activity on no-truck streets should be given priority. Towing should be a major component of the enforcement effort. The project developers will, if

permitted by the City, tow illegally-parked vehicles on Old Northern Avenue to insure unimpeded operation of the bus lane (see discussion of bus transit in Demand Reduction/Management section below). The project developers must also enforce restrictions dealing with no on-street or peak period deliveries (see Employer-Sponsored Program in Demand Reduction/Management section).

Areawide Commercial Vehicle Restrictions. Actions to reduce vehicle use in congested areas should consider all travel, including goods movement. One significant factor that often contributes to street congestion is delivery/loading activity by commercial vehicles, particularly the larger trucks which utilize South Boston streets. However, restrictions on truck deliveries are particularly difficult to implement because of the large number of vehicle operators involved. The project developers will cooperate with the City in formulating an areawide policy on managing commercial vehicle traffic to reduce peak hour congestion. Various proposals have been made for restricting traffic in peak hours, including time shifts in deliveries, permits, and vehicle size limitations. Much of the discussion involving truck deliveries is based on "Actions to Reduce Vehicle Use in Downtown Areas," John Crain et al., Transportation System Management, Transportation Research Board, Special Report 172, 1977.

Time shifts in delivery schedules may help improve peak hour traffic conditions. One approach is to schedule goods and services traffic before or after the morning rush period. Because the morning rush period is slightly shorter than the afternoon rush period, the morning period generally has more uncongested time available. Many commercial vehicles already make early deliveries, which indicates that restructuring of delivery times has some acceptance. Another approach is to encourage more night deliveries. In some cases, the installation of "night-drop" facilities (analogous to the night mail-drops and bank deposits) can facilitate a shift to night deliveries.

Permits can be issued for commercial vehicles so that only those that need to be in the congested area during the peak period have legal access. Such permit systems may have to be augmented with designated truck routes and appropriate signage to divert non-permit commercial vehicles away from the congested area.

Vehicle-size restrictions can be imposed. Large trucks and commercial vehicles tend to aggravate traffic congestion during peak periods, but smaller vehicles

(such as panel trucks and pickups) have operating characteristics and parking requirements similar to automobiles. Therefore, if the larger vehicles are excluded in specific areas during peak periods, traffic may flow more freely. Again, this could be done in conjunction with the proposed new South Boston Bypass Road discussed in the subsequent section on New Roadway Capacity. Limitations would also be desirable to on-street loading/unloading activity whenever possible.

On-street truck loading currently occurs at many locations in South Boston. These activities block portions of through roadways, encouraging truck drivers to use alternate routes (including residential streets) to avoid the congestion caused by the unloading activities. This can be alleviated by encouraging private warehouses to relocate their loading docks to off-street locations. This effort should be undertaken both on and off the designated truck route to eventually eliminate all on-street loading.

It is recommended that the BTD work with employers in South Boston to encourage implementation of these measures, and that appropriate zoning changes be implemented as required to allow off-street loading facilities.

South Boston Transportation Study

This project-specific Transportation Access Plan cannot resolve the larger and long-standing transportation planning issues of the South Boston area and nearby regional transportation facilities. However, it is recognized that the South Boston community has legitimate concerns about traffic flow and pedestrian safety throughout the neighborhood. The City has retained a traffic consultant to develop a South Boston Transportation Program. The first phase of the program is the reconsideration of truck routes through South Boston with implementation of any changes anticipated in spring of 1987. The second phase will develop a vehicle circulation plan with implementation scheduled for October 1987. The final phase addresses traffic signal and intersection improvements which would be implemented from summer 1987 through 1988. The project developers have contributed substantially to the cost of conducting the study and will work with the City and its consultant to assist in implementing the traffic improvements. The Fan Pier and Pier 4 project team will continue to maintain liaison with the City in this effort.

The study should focus attention on the issues of most concern to local residents. Some items recommended for inclusion are:

- Traffic to the Boston Marine Industrial Park (BMIP) via I and K Streets.
- Bypass traffic in general on E and F Streets.
- Bypass traffic on Dorchester Street and Old Harbor Street (around the Dorchester Heights monument).
- The West 7th Street/Dorchester Street feeder routes.
- Illegal parking on certain streets due to the influence of the BMIP, the Barnes Building, and other facilities.
- The effect of commercial truck traffic on neighborhood streets.
- Better access to the area south of Northern Avenue for the commercial establishments in that area.
- Approaches to promoting pedestrian safety in general and along commuter routes in particular, including such measures as painting crosswalks at intersections, provision of crossing intervals at traffic signals with pedestrian-actuated pushbuttons, and prohibition of parking near intersections to improve visibility.
- Work with the MDC to consider options for implementing its tentative proposal to prohibit commuter traffic along Day Boulevard.
- Restriction of commuter traffic on L and D Streets.
- Possible changes in traffic circulation in the residential portions of South Boston to discourage commuter and truck traffic.
- Impacts of the reopening of the section of Dorchester Avenue adjacent to the South Boston Postal Annex.

NEW ROADWAY CAPACITY

This section considers options which can provide additional roadway capacity through new construction or the reclamation of previously-built but now underutilized capacity.

Advance Construction of Links to the Seaport Access Road

It would be highly desirable to construct as soon as possible the proposed connections to the Seaport Access Road between Relocated Northern Avenue and Congress Street. This was recommended in the Fan Pier/Pier 4 Draft EIR and now appears to be accepted as a necessary feature of local infrastructure planning. As a result, design of these links should be completed by the Central Artery Team in 1988. Construction is expected to take place during 1990-1992. The project developers will continue to provide planning information to agencies responsible for implementing these facilities.

The construction would involve two one-way roadways running parallel to and between Pittsburgh Street and B Street, as shown earlier in Figure 5. They would complement another one-way pair formed by Sleeper and Pittsburgh Streets. Farnsworth and Stillings Streets would remain as local access streets only. The new links would help to disperse traffic between the project sites and the west via Congress Street and Relocated Northern Avenue, and to the south via Congress, B, Fargo and D Streets as well as Northern Avenue, Ramp, Viaduct, Summer and D Streets. B Street between Congress and Fargo Streets, along with Fargo Street between B and D Streets, should be repaved. These new roadways can eventually be tied into the South Boston Bypass Road described below, but are not dependent on its implementation.

South Boston Bypass Road

In 1980, a study was conducted to determine the feasibility of several options proposed to alleviate truck traffic in South Boston, as well as to improve access to the seaport area ("Preliminary Environmental Assessment, Seaport Access System, South Boston, Massachusetts, "Fay, Spofford & Thorndike, Inc. and Wallace, Floyd, Ellenzweig, Moore, Inc., June 1980). One of the alternatives evaluated was a new roadway linking the Southeast Expressway at the Southampton Street interchange with Summer Street, Congress Street, and Relocated Northern Avenue. Much of the route was proposed to be in the existing railroad cut running parallel to and just west of B Street and passing under Dorchester Avenue and West Seventh through West Second Streets. It was proposed for truck traffic only south of West First Street, primarily because the rail cut is narrow and it would be prohibitively expensive to rebuild all of the bridges to permit more than two-lane operation for general purpose traffic. It is proposed here, however, that the two-lane road be utilized as a

high-occupancy vehicle (HOV) and truck facility. The priority order of use of the available capacity would be buses, trucks, vanpools, taxis, and carpools (three or more occupants). During periods of heavy construction activity related to the many facilities proposed in the South Boston waterfront area, its primary use would be as a facility for construction vehicles.

At the northerly end, the South Boston Bypass Road could tie into the new connections described above for access to Relocated Northern Avenue. It could also be connected to Fargo Street as an alternate route to the Army Base area via Summer Street, although Fargo Street would require repaving. It would provide a direct connection between the Northern Avenue area and the Southeast Expressway and would divert some of the traffic, including the larger commercial vehicles, from South Boston streets, which has been a source of concern to local residents. It would operate as a relief valve for the Southeast Expressway/Seaport Access Road route if congestion builds at the Massachusetts Avenue interchange. It might also serve as an incentive to increase private automobile occupancy if cars with three or more passengers were permitted to use this as a shortcut to the Southeast Expressway beyond the Massachusetts Avenue congestion point. The implementing agency would be the MDPW. The project developers will assist in feasibility planning and estimating costs and benefits of the facility's construction.

Reopening of Dorchester Avenue

As noted earlier, increased vehicle capacity is required to handle commuter traffic diverted from L Street, D Street, and Day Boulevard if those roadways are closed to commuter traffic, in accordance with the objectives of the MDC and the South Boston community. Part of this new capacity can be obtained from reopening the closed portion of Dorchester Avenue now used by the U.S. Postal Service at the South Boston Postal Annex. The roadway is currently under federal jurisdiction. A one-way version of such a facility is planned as part of the I-90/I-93 project, although it would be a new ramp adjacent to the existing roadway. It would be desirable, at least as an interim measure, to operate the reopened roadway as a two-way facility to obtain maximum opportunity for alternative routes to/from South Boston. The two-way scheme can either be retained or converted to the one-way proposal when the I-90/I-93 project is constructed. The U.S. Postal Service would retain sufficient space for its truck loading/unloading activities. This proposal should be investigated further as part of the South Boston Transportation Study.

DEMAND REDUCTION/MANAGEMENT

Employer-Sponsored Program

Reducing the amount of traffic generated and managing it more efficiently are equally effective means to mitigate traffic. Much can be done at the employer level to develop programs in this area and to provide the proper incentives to make them work. To reduce auto use, the Fan Pier and Pier 4 developers will, through their lease requirements, have future tenants introduce and maintain programs which encourage ridesharing as well as use of mass transportation. Programs will include the following:

- Ridesharing-related measures
  - Preferential parking for carpools/vanpools.
  - Participation in a joint carpooling program with other tenants and other area developers and companies.
  - Provision by tenants of carpool/vanpool matching service.
  - Sponsorship of Caravan (an organization which leases commuter vans and provides some administrative organizational help) or other van leasing program.
- Transit-related measures
  - Tenant sales to employees of MBTA passes and private bus line tickets.
  - Provision of space in tenant areas for commuter information on routes, schedules, fares, carpools/vanpools, and pass/ticket programs.
- Other measures
  - For employees who wish to commute via bicycle, provision by the developers of a secure bicycle storage area.
  - Consideration by tenants of a flex-time or staggered work hour system to reduce peak hour traffic impacts.
  - Restriction of tenant delivery vehicles to off-peak periods.

-- All delivery/service activities will take place off-street.

-- Promotional material about the programs in tenant publications.

-- Appointment by tenants of a Transportation Manager to coordinate all of the above efforts.

MBTA Rapid Transit Improvements

To address the projected deficiencies in planning capacity on the Blue and Orange Lines, increased frequencies (i.e., reduced headways) are recommended. On the Blue Line, shortening headways from four minutes to three would increase planning capacity from 6,600 to 8,800 and bring the volume-to-planning-capacity ratio to the ideal of 100 percent. On the Orange Line, the provision of a 3.75-minute average headway as currently provided on the Red Line/South would increase projected Orange Line capacity from 12,400 to 14,880 which would likewise provide sufficient capacity to handle expected ridership.

These recommended mitigation measures would require no physical improvements to either lines' right-of-way. MBTA officials were contacted to confirm that the Blue Line and new Orange Line signals can handle the recommended headways. However, additional rolling stock and operating crews would be required.

Water Shuttle

At the request of the State Interagency Coordinating Committee, the Fan Pier developer has studied the feasibility of a water shuttle which would service prominent waterfront locations such as major transit stations, the Fan Pier and Pier 4 Projects, other developments, and public institutions. Such a water shuttle would improve access between the sites and public transportation nodes, fostering commuter use of mass transit to the Fan Pier and Pier 4. An intermodal water shuttle could provide an enjoyable alternative to land-based transit, particularly at peak hours, and could be used in addition to the previously discussed bus shuttle system. Other groups, such as the EOTC, Boston Harbor Associates, and the Boston Chamber of Commerce, have also been exploring similar types of waterfront transportation systems. The project developers will provide boat landings and other facilities at their projects, coordination and scheduling of services, and marketing/promotional services to attract patronage. Coordination will also include the World Trade Center relative to

commuter boat destinations. The MBTA, BRA, EOTC, Massport, as well as other agencies and developers, are also participating in this program.

Water Taxi Service

Unlike a commuter boat operation which serves long-haul trips, or a scheduled water shuttle, a water taxi service would cater to short on-demand trips around the harbor using smaller craft. The Massachusetts Port Authority has already had a successful experience with its Airport Water Shuttle this year, although this is a scheduled service. A true on-demand water taxi service would be ideal for trips between the Fan Pier and Pier 4 sites and North Station, Charlestown, East Boston (including the airport), and other harborside destinations in Downtown, particularly during peak commuter hours when land connections may be difficult due to traffic congestion. Although difficult to quantify, benefits from a water taxi service would include reduced auto travel in critical areas such as the Fort Point Channel crossings, the Callahan and Sumner Tunnels, and the Mystic River crossings. Such services have been used very successfully in other cities (e.g., Stockholm). Docking facilities would need to be provided by developers and agencies such as the MBTA, BRA, EOTC, MDC, and/or Massport along the waterfront in appropriate locations. The Pier 4 developer is, with the encouragement of the State Interagency Coordinating Committee, planning to implement a water taxi service in conjunction with the initial construction on Pier 4. Results of the early operation will be used to refine and expand the service as ridership increases with successive phases of development.

Hotel Marketing, Information, and Shuttle Service

The Fan Pier and Pier 4 developers will work with project hotel operators and developers of other area projects to reserve blocks of project hotel rooms during major World Trade Center and Boston Design Center exhibits. By locating out-of-town visitors in the Fan Pier and Pier 4 hotels, peak hour vehicular travel across the critical Fort Point Channel crossings could be reduced. The project developers will also manage or provide a shuttle vehicle connecting the projects' hotels with major South Boston and Downtown destinations and Logan Airport, supply up-to-date information to travel agents on the various water or bus services that will be serving the hotels, and disseminate information on all available public transport services at the hotels themselves.

Parking Supply and Management

The limitation of parking supply for the projects to not more than one space per 1,000 square feet of office space, plus appropriate spaces for non-office use, has beneficial impacts on local and regional highways. Additional benefits will be achieved through management by the project developers of the available parking supply by allocating at least 20 percent specifically to non-commuters. This will be done by making them unavailable for use before 9:30 and by employing rate control or other means to discourage all-day use.

Pedestrian Access

Relocation of the Northern Avenue Bridge to the south and the current proposal to eliminate pedestrian access across the existing bridge would add about 500 feet to the walking distance between the sites and destinations such as Aquarium Station on the Blue Line and the commuter boat facilities at Rowes Wharf and Long Wharf. Irrespective of plans to create Harborpark attractions on the existing Northern Avenue bridge, it would be very desirable to retain pedestrian access across the entire span to shorten walking distances to the Downtown area. The project developers will provide public pedestrian ways and spaces integrated with the City's Harborpark concept. Ample sidewalk elements will be provided along Old Northern Avenue, and arcades and facade setbacks will be designed into certain buildings along Old Northern Avenue to provide comfortable, spacious, weather-protected, and attractive bus waiting areas.

Agency Coordination and Liaison

The project developers will continue to maintain liaison with various City and State agencies involved in planning transportation facilities in the region, and to cooperate in advancing feasible ideas and plans, such as:

-- Expansion of South Shore commuter boat service.

-- Reinstitution of South Shore commuter rail service.

-- MBTA transit improvement program.

-- Implementation of HOV lanes on the regional highway system.

-- Satellite parking facilities around the Boston highway system.

-- Logan Airport terminal facilities in South Boston.

This is in addition to those mitigation measures specifically discussed in this Final EIR. The project developers have committed to implement those measures within their direct control, and to continue working with and assisting other agencies to the extent possible with respect to other measures under the jurisdiction of those agencies. The complexity and magnitude of some of these measures precludes obtaining firm commitments at this time. Also, there are overlapping jurisdictions, which means that a coordination effort will be required among all responsible parties. The project developers are willing to be a continuing part of that effort. In the case of the shuttle bus system, the developers are committed to the actions discussed earlier.

MITIGATION ANALYSIS SUMMARY

As discussed earlier, the mitigation analysis was done in two steps, the first with all traffic diversions in place, the second with additional intersection-specific mitigation actions. Traffic diversions are those occurring along main routes into and out of Boston during the peak commuter hours which would be most affected by the elimination of commuter traffic on L Street, D Street and Day Boulevard, construction of the South Boston Bypass road, and the reopening of Dorchester Avenue. The estimated magnitude of these diversions was described earlier. The following sections summarize the impacts of these diversions, as well as intersection-specific mitigation measures. A concluding section describing the qualitative impacts of the demand-reduction strategies is also presented.

Impacts of Traffic Diversion Mitigation Measures

Table 41, presented previously, shows the estimated changes in LOS and V/C ratio on the 11 intersections identified earlier as having an LOS "E" or "F" condition in either the 1995 Build AM or PM peak hour prior to mitigation. The middle column of data shows the impacts of only the traffic diversions, i.e., without intersection specific measures. Clearly, traffic diversions, particularly in the absence of additional mitigation measures, have beneficial effects for areas from which traffic is diverted and adverse effects in areas to which it is transferred. The locations showing the greatest benefits are as follows:

o Day Boulevard/L Street, from LOS "E" to LOS "A" in both the AM and PM peak hours;

TABLE 41
Summary of
Mitigation
Program
Impacts

	1995 Build Without Mitigation				1985 Build With Traffic Diversions				1995 Build With Full Mitigation			
	AM Peak		PM Peak		AM Peak		PM Peak		AM Peak		PM Peak	
	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS
Summer St./ Atlantic Ave.	1.05	F	1.32	F	0.97	E	1.32	F	0.85	D	0.89	D
Northern Ave./ Atlantic Ave.	1.32	F	1.13	F	1.31	F	1.14	F	0.94	E	0.92	E
Congress St./ Atlantic Ave.	1.32	F	1.11	F	1.33	F	1.10	F	1.13	F	0.94	E
High St./ Atlantic Ave.	1.65	F	1.05	F	1.65	F	1.06	F	1.65	F	1.06	F
Northern Ave./ Ramp St.	0	E	0	E	191	D	0	E	0.19	A	0.37	A
Day Boulevard/ L St.	2	E	44	E	801	A	678	A	801	A	678	A
New Northern Ave./SAR Ent.	0.63	B	1.21	F	0.66	B	1.22	F	0.67	B	0.91	D/E
New Northern Ave./SAR Exit	0.89	D	0.95	E	0.97	E	0.97	E	0.84	D	0.67	B
Kosciuszko Cir.	1.17	F	1.01	F	0.90	D/E	1.01	F	0.90	D	1.01	F
Congress St./ SAR Entrance	0.61	B	0.94	E	0.65	B	1.05	F	0.49	A	0.89	D
Congress St./ SAR Exit	1.10	F	0.59	A	1.21	F	0.59	A	0.77	C	0.43	A
Old Colony Ave./D St.	0.68	B	0.86	D	0.78	C	0.99	E	0.57	A	0.66	B

* V/C = volume-to-capacity ratio. Available reserve capacity given for unsignalized intersections.

** LOS = level of service.

- Kosciuszko Circle, from LOS "F" to LOS "D" in the AM peak;
- Northern Avenue/Ramp Street, from LOS "E" to LOS "D" in the AM peak;
- Summer Street/Atlantic Avenue, from LOS "F" to LOS "E" in the AM peak.

Other locations which exhibit adverse impacts in exchange for traffic diversions off South Boston neighborhood streets are as follows:

- Congress Street/SAR Entrance, from LOS "E" to LOS "F" in the PM peak;
- Congress Street/SAR Exit, from LOS "F" with a V/C ratio of 1.10 to LOS "F" with a V/C ratio of 1.21 in the AM peak;
- Relocated Northern Avenue/SAR Exit, from LOS "D" to LOS "E" in the AM peak.

In addition, one other location not on the original list of 11 deficient locations would become deficient in the PM peak hour. This is Old Colony Avenue/D Street, which would go from LOS "D" to LOS "E" and is included at the bottom of Table 41.

The above results are prior to intersection-specific mitigation (summarized below), which was applied to improve original 1995 Build deficiencies as well as any new ones created through traffic diversions. It should be noted that A Street, which would carry some of the diverted traffic, is estimated to operate at acceptable levels of service with the measures suggested under Arterial-Related Improvements.

Impact of Intersection-Specific Mitigation Measures

Table 41 also summarizes the effects of applying the various traffic operational improvements discussed earlier on the LOS and V/C values resulting from the traffic diversions. In all cases where deficiencies were caused by traffic diversions, the suggested improvements would cause operations to fall into the acceptable range. They would also improve LOS values at most other deficient locations to LOS "D" or better, or at least decrease V/C ratios below their values without such mitigation. The locations which have remaining

LOS "E" or "F" conditions after all mitigation measures are applied are as follows:

- Northern Avenue/Atlantic Avenue, although V/C ratios are improved from 1.31 to 0.94 in the AM and from 1.14 to 0.92 in the PM;
- Congress Street/Atlantic Avenue, but with V/C ratios improved from 1.33 to 1.13 in the AM and 1.10 to 0.94 in the PM;
- High Street/Atlantic Avenue, where no operational improvement is feasible short of major redesign or reconstruction (AM V/C ratio = 1.65 and PM V/C ratio = 1.06);
- Kosciuszko Circle, where no operational improvement appears feasible to reduce the PM peak hour V/C ratio below 1.01.

Construction of the Depressed Central Artery would be very beneficial to the operation of many Downtown locations, including the Atlantic Avenue deficiencies noted above. As previously stated, the Probable Project Impacts section analyzed traffic conditions in 1995 at study area intersections with only the Seaport Access Road and Third Harbor Tunnel portions of the I-90/I-93 project. The depression of the Central Artery, which is expected to be completed a few years after 1995, was not included in the highway network. Analysis of the 1995 Build and No-Build conditions expected in Downtown Boston indicates the importance of the Depressed Central Artery in providing relief to users of the City street system. The benefit to these users occurs from realignment and reconstruction of streets paralleling and crossing the Central Artery corridor, resulting in safer and more efficient intersections. This benefit of depressing the Central Artery is often overlooked due to much improved conditions expected for Artery users themselves. As such, the Central Artery project can be considered as a long-term mitigation device for projects located along the Northern Avenue development area.

Effect of Demand Reduction Strategies

Although there are many variable factors that make it impossible to quantify the precise effects of each of the above measures on traffic level of service or V/C ratio, it is clear that ridesharing and a first-rate multi-modal public transportation system, along with appropriate incentives for their use, can improve short-term and long-term traffic conditions. The potential exists for a substantial shift in commuting patterns

from single-occupant private autos to high occupancy vehicles or to other modes. Recent experience with express bus services, commuter rail, water transportation, and even conventional rapid transit indicates that people are willing to use these services. If such services can be improved as proposed, Boston's streets and highways will be able to absorb the travel demands of a growing city and region.

TRANSPORTATION MANAGEMENT ASSOCIATION

In developing land areas, another possible mitigation solution is the establishment of a Transportation Management Association (TMA) whose members will be responsible for monitoring site generated traffic and impact area roadway conditions and reporting the results to the City. The TMA will be responsible for installation and operation of all monitoring equipment necessary for the monitoring program described above. The TMA will collect and record the monitoring data and prepare annual monitoring reports to the City.

In addition to its role as a monitoring organization, the TMA will also function as a vehicle to share information, coordinate activities, and cooperate with the City in defining problems and identifying solutions. As an information sharing entity, it could be responsible for many of the information dissemination activities listed under potential mitigation measures. It could be the agency for informing employers and employees about schedules for public transportation, the advantages of ridesharing, and the value of flexible work hours. As a coordination organization, it could provide or arrange for carpool and vanpool matching services, it could provide for transit pass sales, and it could coordinate the activities of the many varied employers in the area, providing economies of scale and efficiencies that could not be enjoyed by individual employers. Finally, the TMA can focus attention on solutions to area problems by the City and State agencies.

Initially, the TMA will be composed of representatives of the Fan Pier and Pier 4 developments. The TMA, in addition, shall have as its members all owners or lessees of real property located with a Northern Avenue PDA, as specified in the Cooperation Agreement for Planned Development Area No. 23. As the area develops, the Boston Redevelopment Authority (BRA) will exercise its best efforts to have other developers in the area become TMA members. All members will be subject to on-site and off-site traffic goals and traffic mitigation standards. The Association would provide an

organization for those with an interest in the area's transportation system to work together to promote the efficient and effective operation of that system as the area grows.

If the TMA is not established or extended to include all members listed above, or if the TMA ceases to exist, references to members of the TMA shall include all developers and owners who fall within the definition of PDA development and non-PDA development.

CONSTRUCTION IMPACTS AND MITIGATION

EXISTING CONDITIONS

Construction activities and how they are managed is an important element of the Access Plan. In this section of the Access Plan, existing site conditions, their use and potential change during the construction period are discussed. In addition, future conditions including expected changes in land use and transportation infrastructure are presented so that a clear picture is developed of the future transportation environment within which construction activities will take place.

Finally, the construction impact section details the probable transportation impacts during two separate points in time: the time when peak truck activity is anticipated, and the period when the number of construction workers on the site reaches its maximum. Since these two periods do not coincide, two separate analysis of impacts have been presented. Mitigation measures deemed necessary to insure that construction activity creates as little impact as possible are also discussed in this section.

A detailed discussion of the existing transportation infrastructure has been provided in the main body and Appendix of the Access Plan. In the construction section, some brief highlights of conditions that impact construction activities are discussed.

The construction site for Fan Pier is currently occupied by a large commuter parking area. The lot is well used since, by parking at the Fan Pier instead of downtown, a commuter can save about six dollars a day.

The provision of 1,500 public parking spaces at the Fan Pier contributes significantly to through traffic in the South Boston neighborhood. The Pier 4 construction site is occupied by Anthony's Pier 4 restaurant. It is a major commercial activity in the development area, but its peak traffic generating periods do not coincide with major commuter travel times.

Trucks are also a significant portion of existing traffic since the Northern Avenue development area is largely industrial. At the intersection of Northern Avenue and Ramp Street and the Fish Pier, trucks comprise 17 percent of all vehicles in the AM peak hour. On the Northern Avenue Bridge westbound, trucks represent 18 percent of the three-hour AM volume.

Truck traffic in the project area is affected by existing limitations on the Fort Point Channel

crossings. The Dorchester Avenue crossing has been closed for many years, although there are efforts now to reopen it. A major proposed crossing, the Seaport Access Road, will not be available before 1994. The Congress Street and Summer Street Bridges are in need of repair, and the Northern Avenue Bridge is slated for replacement in 1989. Current weight limits on the three bridges are displayed below:

	2-Axle	3-Axle	4+ Axle
Northern Avenue	9 tons	12 tons	19 tons
Congress Street	14 tons	20 tons	29 tons
Summer Street	12 tons	15 tons	19 tons

FUTURE CONDITIONS DURING CONSTRUCTION

Several measures have been proposed to alleviate truck and commuter traffic in the South Boston community. A truck route has been designated and posted, but enforcement remains a problem. Design work to upgrade the Summer Street and Congress Street Bridges is underway, with completion expected before 1991. The New Northern Avenue Bridge will open in 1989, and negotiations to reopen Dorchester Avenue are proceeding.

A more innovative proposal is the proposed South Boston Bypass Road along a Conrail right-of-way. This would carry trucks and buses and high-occupancy automobiles on a below-grade facility. Provision of this roadway would enable the City to close L Street and D Street to through traffic (including commuters and trucks). It would also handle the trucks associated with construction of the I-90/I-93 project.

As discussed in the project construction impacts section, the busiest period for project construction will be early 1989 for trucking activity and early 1990 for worker activity. In early 1989, no significant new roadways will be open, but in early 1990, New Northern Avenue and the New Northern Avenue Bridge will be open, as well as the advance-construction Seaport Access Road connectors. The Seaport Access Road itself will not yet be completed.

In addition to changes in transportation infrastructure expected during the Fan Pier/Pier 4 construction period, land use changes are also expected. The Access Plan appendix contains a complete listing of developments expected to be completed within two time frames: 1990

and 1995. Since peak Fan Pier/Pier 4 construction activity will occur in 1989 and 1990, future traffic conditions in this time frame were projected by assuming all 1990 land use projects were completed in 1989 and 1990. Thus, a conservatively high number was used as a base condition for estimating construction traffic impacts.

One of the most significant future conditions impacting traffic flow during Fan Pier/Pier 4 construction results from closing the public parking lot at the Fan Pier before 1989. This will reduce traffic in the development area, because it is assumed that the City will not grant new permits for public parking in that area.

PROBABLE PROJECT CONSTRUCTION IMPACTS

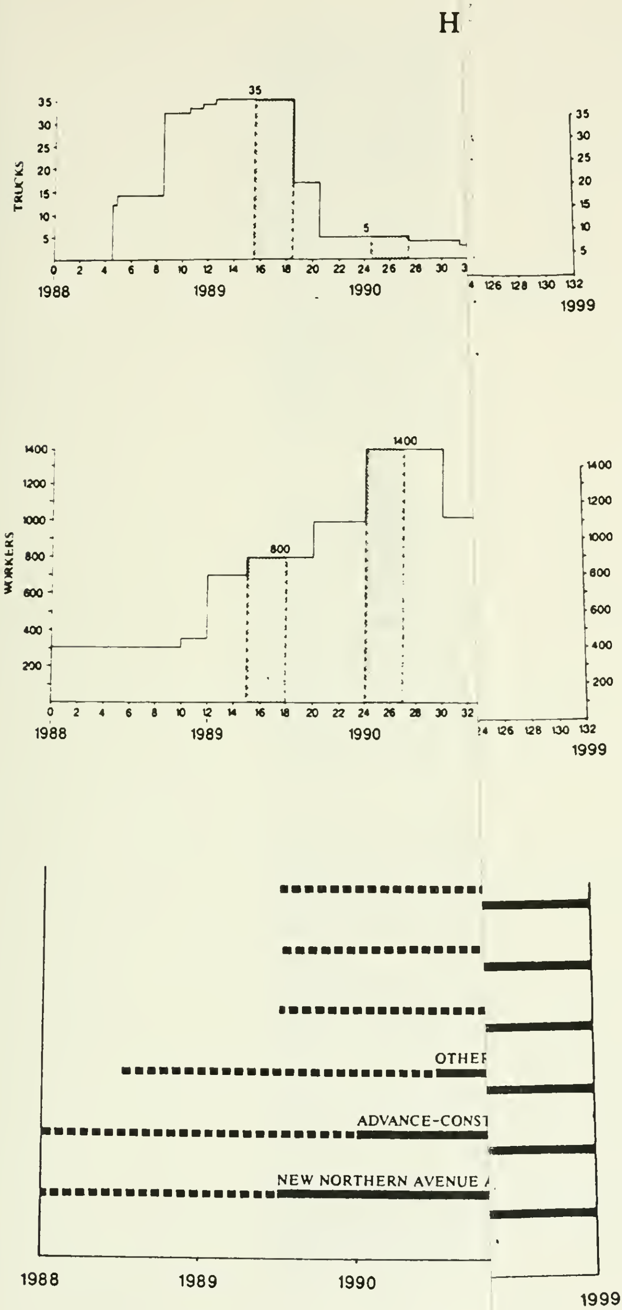
Construction activities which create impacts on the transportation systems serving Fan Pier/Pier 4 are: removal of excavated material; delivery of building materials; and commuting trips of construction workers. Each of these activities will be discussed in a separate section. The entire construction impact analysis has been prepared based upon scheduled activities estimated by construction managers for both Fan Pier and Pier 4. The developments have been considered as a single construction project, and impacts are reported accordingly.

Construction Schedule

The projected start date for construction is late 1987. For simplicity, January 1, 1988 was used as an approximation for the start date. Figure 22 displays the proposed construction schedule for the combined projects as well as implementation schedule for the area road improvements. As shown in the figure, the busiest period for construction truck activity will be in early 1989. The area roadway infrastructure work will be completed in 1989-1990. The busiest period in terms of construction workers will occur in early 1990, when, for six months, about 1,400 workers will be on the job. Since the peak truck activity period and the peak worker activity period do not coincide, they are both analyzed for traffic impacts. Relatively little construction truck activity will occur after 1990, because the buildings on Fan Pier Parcels A, D, F and I, and much of Pier 4, will be complete by that time.

The project infrastructure work has been scheduled so that roadway capacity will not be reduced by on-street activity. Four travel lanes will be continued as

Construction and Roadway Improvements Schedule



LEGEND:
▬ ▬ ▬ Under Construction
▬▬▬ Open to Traffic

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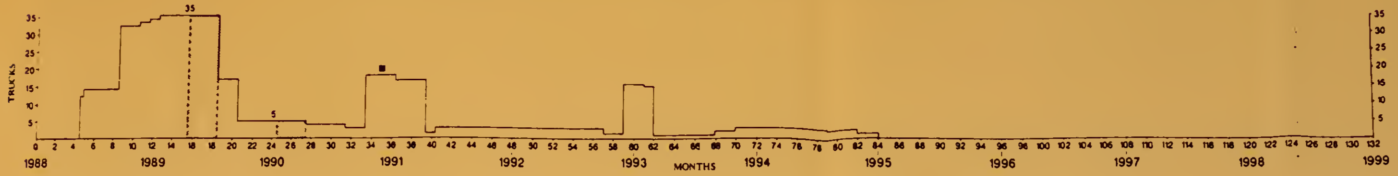
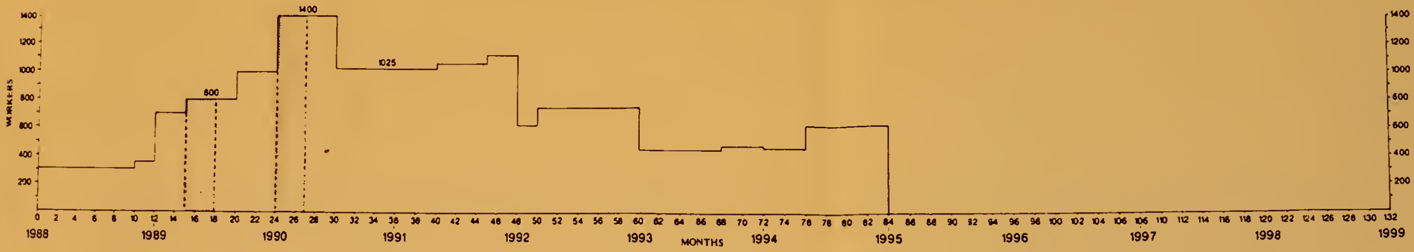
Fig. 22

Construction and Roadway Improvements Schedule

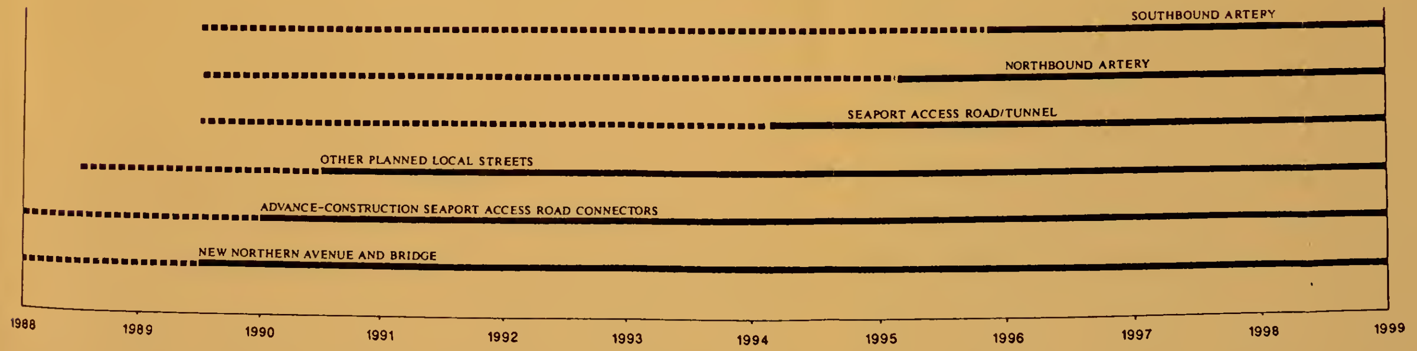
HOURLY CONSTRUCTION TRUCK TRIPS TO SITE (DAY SHIFT)



CONSTRUCTION WORKERS ON SITE (DAY SHIFT)



ROADWAY CONSTRUCTION SCHEDULE



LEGEND:
- - - Under Construction
▬▬ Open to Traffic

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Fig. 22

currently provided on existing Northern Avenue until the New Northern Avenue and Northern Avenue Bridge are opened to traffic. At that time, utility work will reduce the number of travel lanes on Old Northern Avenue to two, which will be adequate since Old Northern Avenue will be used only for construction related traffic. Old Northern Avenue will again become a four-lane road before the first project building opens.

Construction Truck Activity

Total excavation for the two projects is estimated at one million cubic yards. Excavation will occur during 28 months spread over more than five years, but the busiest period for excavation will be from Month 9 through Month 18, when approximately 675,000 cubic yards will be removed, at a rate of about 68,000 cubic yards per month, or about 3,200 cubic yards per working day.

At the present time, the proponents believe removal of excavate can best be handled through trucks. Preliminary feasibility studies show that excavate removal via rail and/or ocean-going barges is uneconomical and that barges cannot access the basin between Fan Pier and Pier 4. Nevertheless, the proponent is continuing to investigate waterborne methods for excavate removal. Should waterborne facilities appear through these studies to be economically attractive, they will be utilized. Accordingly, this analysis is based upon a worst-case land impact assumption that all excavate is removed by trucks.

In order to estimate the number of truck loads of excavate leaving the construction site, a conservative estimate of 10 cubic yards per truck was used. This load can be carried over the Congress Street Bridge under existing conditions. To mitigate the traffic impacts of trucks carrying excavate, some excavation activities will be extended into the evening. Therefore, the maximum outbound truck flow for excavate will be about 30 trucks per hour between 7:00 AM and 3:30 PM and about 12 between 3:30 PM and 11:00 PM.

Compared with the busiest 10-month period discussed above, the other 18 months of excavation will be relatively quiet. During Months 5-8 and Months 19-20, outbound flows will be 12 trucks per hour during the 7:00 AM to 3:30 PM and 3:30 PM to 11:00 PM work shifts. During Months 34-39 and Months 60-62, outbound flows will be 14 to 15 trucks per hour during the 7:00 AM to 3:30 PM shift, but no evening shift will be required.

The most likely destinations for excavate are the Lynn area to the north and the Quincy area to the south. Because it is too early to determine the excavate destinations with certainty, truck routes have been planned and designated to both areas. The impact analysis has assumed use of the Congress Street Bridge for all truck routes, even though the New Northern Avenue Bridge will be available for later construction phases. Figures 23 and 24 show recommended truck routes for trips to and from the sites.

As shown in Figure 24, loaded trucks with excavate will all follow B Street (instead of Sleeper Street) to Congress Street in order to avoid having to make a turn near the residential building at the corner of Sleeper and Congress Streets. (Turning trucks make more noise because of the deceleration and acceleration required.) Northbound trucks (if any) will use the Congress Street northbound on-ramp to the Central Artery and Tobin Bridge. Southbound trucks (if any) will follow Dorchester Avenue to Summer Street to the Surface Artery to the Kneeland Street southbound Expressway on-ramp.

Over 80 months of the entire seven-year period of the Fan Pier/Pier 4 construction, some 230,000 cubic yards of concrete and about 35,000 tons of steel will be delivered to the site. Because delivery activity is spread over an 80-month period, the impacts of delivery vehicles on the area street system are much lower than those caused by excavate removal, which occurs over a more compressed time schedule of 28 months. As a result of physical truck capacity and bridge weight limits, concrete is expected to be delivered at the rate of 12 cubic yards per truck, while steel will be limited to 15 tons per truck. With these physical limitations and the dispersed nature of the delivery schedule over a long construction period, the maximum hourly truck flow for materials delivery is only five trucks per hour, and the average over the 80 months is only two trucks per hour.

Construction Worker Activity

The combined project will require about 5,200 labor-years of construction activity. Workers on-site will exceed 1,000 for about two years (1990 and 1991). During the highest six-month period, the first six months of 1990, 1,400 construction workers will be on the site. This period is analyzed for traffic impact. Estimating the traffic impacts of construction workers requires a review of construction worker arrival and departure patterns during the course of a normal work day. Nearly all workers (and absolutely all in the peak

six-month period) will be assigned to the 7:00 AM to 3:30 PM shift. However, overtime will be commonplace during some phases of the project, especially when one or more buildings are nearing completion. Overtime is normally assigned as a two-hour block at the end of a work shift (and occasionally as a four-hour block). This means that workers essentially operate on a 7:00 AM to 5:30 PM shift when overtime is assigned.

Traffic patterns on the local street system as measured during the EIR work show that morning peak volumes occur after 7:00 AM and that afternoon volumes reach consistently high levels between 3:00 PM and 6:00 PM. These traffic conditions and the temporal patterns of construction workers show that the AM peak period is not critical and the PM peak period is the appropriate period for performing significant impact analysis.

Under the most likely scenario, all construction workers depart from the project beginning around 3:30 PM, adding to the PM peak hour traffic volume. For analysis purposes, this volume was added to peak volumes recorded during the 4:30 to 5:30 PM period.

Vehicle-Trips per Worker Trip

According to a construction contractor with experience at similar sites, the project will generate about one vehicle-trip for every two worker trips. This appears reasonable because it suggests, for example, a vehicle occupancy ratio (VOR) of 1.3 and a transit mode share of 35 percent. The same result would occur if the transit share was 45 percent and VOR was only 1.1, or if the transit share was only 25 percent and VOR was 1.5. Given the fact that most workers will have to pay market rates for parking, these assumptions are reasonable. During the peak construction worker activity period (first six months of 1990), some 1,400 workers on-site will therefore generate 700 auto trips from the site in the PM peak period.

Parking Supply

For much of the construction period, parking will not be available on-site. Workers will have to pay for parking, either on the "McCourt" parcel or on the lot across from Commonwealth Pier. The "McCourt" lot is now nearly full, so workers who park there will displace the office workers now parking there who arrive after 7:00 AM. In view of stated City policy to limit licensing of surface parking spaces in the Northern Avenue development area, some of these displaced parkers may shift to transit, while others may shift to downtown garages, displacing

others and forcing some of those parkers to transit. Thus, if the number of parking spaces does not increase, the net additional parkers will be less than the full number of construction worker vehicles. However, to be conservative, the full number of 700 worker auto trips has been used in the level of service analysis.

TRAVEL DEMANDS

Two years were analyzed in the level of service calculations: 1989 and 1990. 1989 was chosen because it represents the peak period of truck activity, and 1990 because it represents the peak period of construction worker activity. Table 42 shows the peak hour demands associated with each construction design year. The travel demands shown are added to the base 1990 network volumes as discussed in a later section to arrive at analysis volumes.

TABLE 42
PM Peak Hour
Construction
Vehicle
Volumes

		1989	1990
Trucks:	Excavate	30	0
	Delivery	5	5
	Total	35	5
	Subtotal Equivalent Autos*	70	10
Autos:	By Construction Workers	400	700
Total Auto Equivalents		470	710

* Assumes that the traffic impact of one truck is equivalent to the impact of two passenger cars.

Peak Truck Activity (1989)

The peak truck activity period uses a combination of excavate removal trucks and delivery vehicles to estimate changes in street operating conditions. Impacts were calculated at two intersections: Congress Street/Atlantic Avenue and Summer Street/Atlantic Avenue. The impacts were calculated for two cases: first of all, assuming that all truck origins and destinations were north of downtown; and secondly, assuming that all truck origins and destinations were south or west of downtown.

Construction workers were assumed to have the same geographic distribution as workers destined to the project. Travel assignments therefore resulted in some worker vehicle flows through the Summer/Atlantic intersection during the peak truck activity period.

Peak Worker Activity (1990)

During this period, truck activity will be small, so the Congress Street/Atlantic Avenue intersection was not analyzed. Summer/Atlantic was analyzed as well as the New Northern Avenue/Atlantic Avenue intersection. Because the Dorchester Avenue Bridge and the South Boston Bypass Road were assumed not to be available, the intersections of Broadway with A, D and L Streets were analyzed.

Base Traffic Networks (1989 and 1990)

Existing traffic volumes on area street systems were adjusted to reflect these following changes:

- Elimination of public parking at the Fan Pier;
- Addition of background development generated traffic forecast for completion by 1990.

No adjustment was made to reflect truck volumes associated with the I-90/I-93 construction during the two time periods analyzed. Since the final design for I-90/I-93 will not be initiated until 1988, no construction information exists at this time. Early planning by the Central Artery team indicates some construction activity will likely be underway in 1989/1990. This activity will probably consist of construction mobilization, site preparation, construction access road preparation, batch plant construction, etc.

Level of Service Analysis

Level of service results are given in Table 43. Volume-to-capacity ratios are reported for existing conditions, a future base year without construction activity, and two future construction years with construction. As shown in the table, there is no significant difference at any analysis location between the No-Construction period and Construction conditions in 1989 or 1990.

MITIGATION MEASURES

As noted in the construction impacts analysis above, there is no significant impact from construction activities at the project sites in 1989 and 1990. Furthermore, if the City channelizes and signalizes the New Northern Avenue/Atlantic Avenue intersection, and imposes PM peak hour parking restrictions on Atlantic Avenue, Summer Street and Congress Street, as recommended as a mitigation effort in the Impact Assessment,

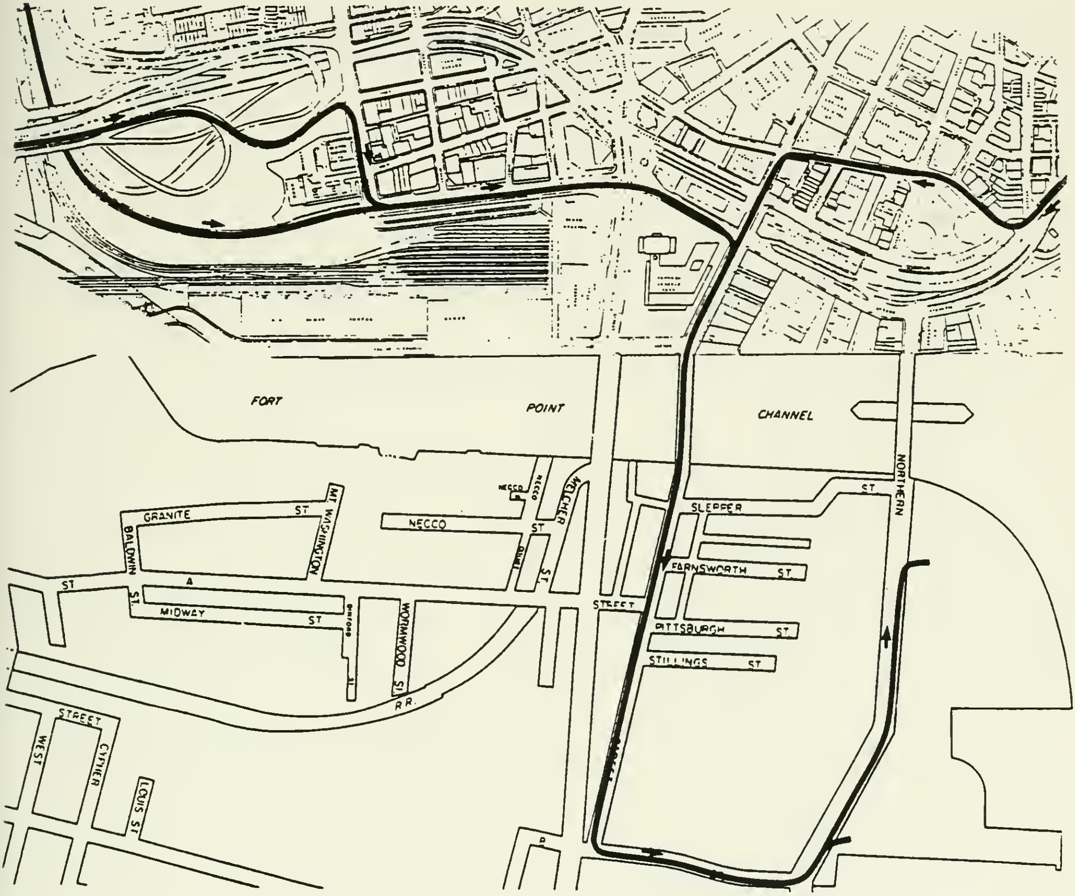
the 1989 and 1990 Construction conditions at the Atlantic Avenue intersections will be better than the No-Construction period conditions without mitigation. Also, with the removal of double parked vehicles at West Broadway and D Street, the City can assure that Level of Service "C" or better is achieved at all the Broadway intersections.

To ensure that the South Boston neighborhood is protected from project construction truck traffic, use of the designated truck routes in Figures 23 and 24 will be required in all construction contracts. The contracts will also allow use of the New Northern Avenue Bridge when it is completed.

Also, as a construction mitigation tool, all contractors working on the site will be required to limit the size of vehicles (subject to bridge load limitations on the proposed truck routes as shown in Figures 23 and 24) being used to remove excavate or bring in construction materials. These vehicle sizes are:

Excavate	10 cubic yards
Concrete	12 cubic yards
Steel	15 tons

In conclusion, construction will not significantly change traffic conditions compared with the projected future year No-Construction situation. This result is partially due to the elimination of public parking at the Fan Pier. Intersection mitigation measures are recommended because they would be beneficial under both No-Construction and Construction conditions. More costly mitigation measures are not needed during the peak periods of construction activity.



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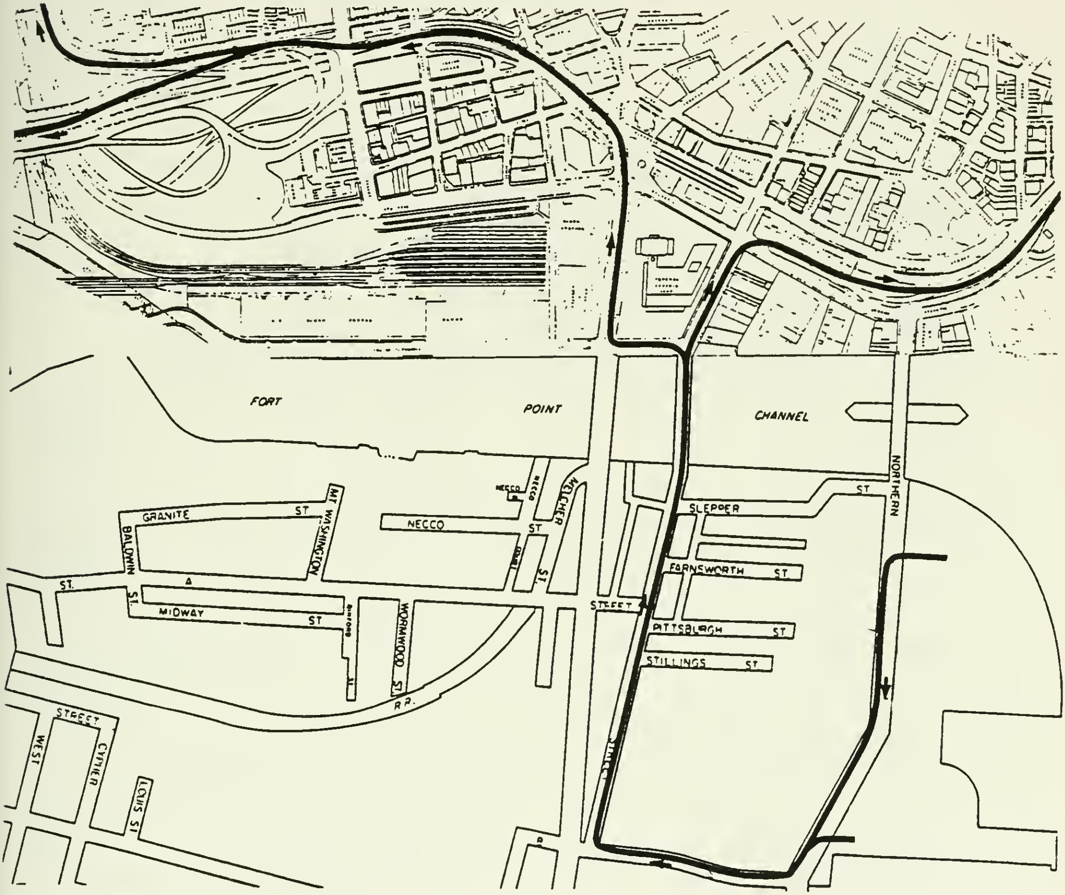
Not to Scale

Truck Routes To Site

Fig. 23



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Not to Scale

Truck Routes
From Site

Fig. 24

TABLE 43
PM Peak Hour Conditions During Construction - 1989 and 1990

					Construction											
					1989 Peak Trucking Activity								1990 Peak Worker Activity			
	Existing		No-Construction Base Year		South/West Unmitigated		South/West Mitigated*		North Unmitigated		North Mitigated*		Unmitigated		Mitigated*	
	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS
Atlantic Avenue/ Congress Street	0.88	D	0.96	E	0.98	E	0.79	C	0.98	E	0.79	C	NA**		NA	
Atlantic Avenue/ Summer Street	0.94	E	1.10	F	1.16	F	0.86	D	1.10	F	0.79	C	1.12	F	0.81	D
Atlantic Avenue/ Northern Avenue***	0.91	E	1.20	F	+	+	+	+	+	+	+	+	1.23	F	0.98	E
A St./ W.Broadway	0.59	A	0.69	B	+	+	+	+	+	+	+	+	0.74	C	0.74	C
D St./ W.Broadway	0.67	B	0.82	D	+	+	+	+	+	+	+	+	0.84	D	0.70	B
L St./ E. Broadway	0.49	A	0.54	A	+	+	+	+	+	+	+	+	0.55	A	0.55	A

* Intersection treatments were proposed at Atlantic Avenue/Congress Street, Atlantic Avenue/Summer Street, Atlantic Avenue/Northern Avenue, and D Street/West Broadway only.

** NA = not analyzed.

*** Old Northern Avenue for existing conditions, New Northern Avenue for future conditions.

+ No impact due to no truck routings through these intersections.

TRANSPORTATION MONITORING AND MITIGATION

The purpose of the monitoring program is to measure future site generated traffic and future roadway volumes. Monitoring is not limited to site-generated traffic but encompasses demand created by background development as well as the provision of roadway capacity. The site generated volumes will be compared with volumes forecast in the traffic impact analysis to assess achievement of trip generation conditions. Future roadway volumes will be assessed against future roadway capacity to determine operating conditions. Where deficient conditions occur, the monitoring program will provide information to assess the nature of the deficiencies and to identify measures which may be taken to correct the deficiencies. This information will then be used to update the Access Plan so that it may reflect and respond to conditions as they change over time.

TRANSPORTATION DEMAND AND CAPACITY CHANGES

This section is designed to summarize the factors which will affect transportation demand and capacity between now and the 1995 analysis year in the project impact area. Changes in transportation demand, expressed as traffic volume, are the result of new development in the area. Included in this development are the Fan Pier and Pier 4 projects as well as a number of other projects located in South Boston and Downtown. Changes in roadway capacity are a result from improvements or additions to the existing roadway system.

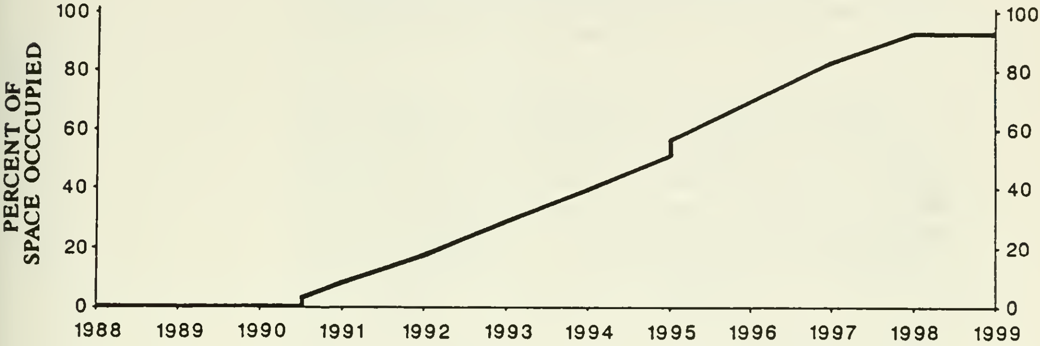
Table 44 shows anticipated background development in South Boston and Downtown through 1995. The traffic expected to be generated by these developments is shown in the Appendix.

Both the Fan Pier and Pier 4 projects are complex construction projects. This fact results in the occupancy and use of their buildings over a long period of time. Figure 25 shows the projected office occupancy of the Fan Pier and Pier 4 developments. The traffic generated by the projects will grow over time in general proportion to the office space occupied (office occupancy accounts for approximately 67 percent of evening peak hour vehicle-trips at full occupancy). Figure 25 also illustrates the timing of projected improvements and additions to the roadway network.

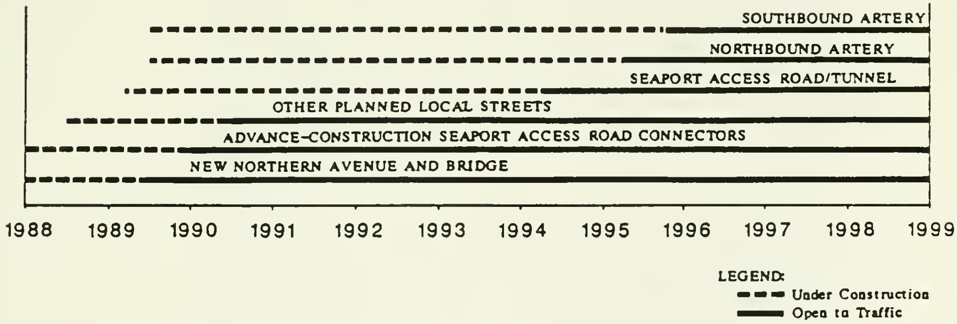
MONITORING PROGRAM GENERAL DESCRIPTION

The monitoring program will consist of two parts: monitoring site generated traffic; and monitoring

OFFICE SPACE OCCUPANCY



ROADWAY CONSTRUCTION SCHEDULE



Project Office Occupancy and Roadway Improvements Schedule

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Not to Scale

Fig. 25

traffic conditions on study area roadways. The Transportation Management Association (TMA), described in a subsequent section, will be responsible for monitoring site generated traffic and impact area roadway volumes and for reporting the results to the City.

The off-site monitoring effort will commence two years after receipt of PDA approval from Boston Zoning Commission for either project. On-site monitoring for each of the two projects will commence upon occupancy for each respective project. Monitoring will continue until three years after occupancy of the last building in that development. On-site and off-site monitoring will be conducted on a continuing basis. Reporting by the TMA will be done annually, beginning 15 months after the occupancy of the first building.

Each year the TMA will report to the City the volume of traffic generated by the site and the volume of traffic at selected locations along the impact area cordon. For purposes of assessing achievement of goals, the weekday evening peak hour will be reported and analyzed. This report will take the form of a "Supplemental Traffic Access Plan." In addition to reporting observed conditions at monitoring sites, it will also forecast four year projections of site and area traffic volumes. The annual Supplemental Traffic Access Plan will be prepared separately for both the Fan Pier and Pier 4 projects. The scope of the Supplemental Access Plan will include a reanalysis of project-generated travel demands as well as those demands created by other developments in the area. The plan will report on the implementation status of public highway and transit improvements. Finally, the Supplemental Traffic Access Plan will evaluate mitigation measures to minimize impacts.

Based on the traffic impact analysis, which projected operating conditions for both the morning and evening peak hours, the heaviest traffic volumes generally occur in the evening peak hour. In addition, the heaviest project demands are also projected to occur in the evening peak hour. As a result, the monitoring program focuses on traffic leaving the site and the study area in the evening peak hour.

The evening peak hour volumes reported for each location and the sites will be the 85th percentile volumes for the year. The 85th percentile volume is the recorded volume which is equal to or higher than 85 percent of all recorded volumes. Based on approximately 250 work days per year, the 85th percentile volumes will represent the volume recorded on the 38th highest volume workday of the year.

The 85th percentile volume will be used for comparison because it is generally infeasible to provide transportation capacity for the busiest day of the year. Such an approach would involve the unnecessary investment of resources into facilities which would be fully utilized on only a few occasions during the year. Therefore, the design of transportation facilities is based on accepting an overcapacity situation a limited amount of time in order to avoid building capacity in the system which will generally go unused. Use of the 85th percentile day for analysis purposes relates to a system capacity that will accommodate volumes likely to be experienced on most days. The 85th percentile has been historically used by highway agencies as the economical value for highway design purposes.

MONITORING PROGRAM FOR PROJECT TRAFFIC

The purpose of monitoring project generated traffic is to compare actual project trip generation to that which would be expected based on the trip generation assumptions used in the Final EIR and this Access Plan to project future conditions. On an annual basis, the trip generation equations from the traffic impact analysis will be applied to the occupied space in the developments to determine expected traffic volumes from the developments. Actual driveway counts for the developments will be compared with these projected volumes to determine the approximate extent to which the trip generation assumptions correspond to actual trip making behavior. Driveway counts are agreed to be far and away the best measure of traffic volumes generated by the projects. Nevertheless, a small percentage of vehicle-trips destined to the projects may park off-site. As part of the four-year access plan process, the City may require the project proponents to undertake appropriate surveys to measure the total vehicle-trip generation associated with the project.

The trip generation factors used in the traffic analysis include daily person-trip rates, proportion of trips leaving the sites during peak hours, percent of trips using transit, and average number of persons per vehicle. The Appendix contains a detailed discussion of the values used for these various factors for each land use proposed in the developments. Based on the values used, the estimated number of outbound evening peak hour vehicle-trips per unit of development has been calculated for each land use. These are shown in Table 45.

TABLE 45
PM Peak Hour Outbound Trip Generation Rates

Land Use	Rates	
	Fan Pier	Pier 4
Office	0.50 trips/1,000 SF*	0.61 trips/1,000 SF
Retail	0.28 trips/1,000 SF	0.41 trips/1,000 SF
Hotel	0.23 trips/room	0.23 trips/room
Housing	0.15 trips/unit	0.15 trips/unit

* Square Feet.

The goal is for actual project trips to be equal to or less than the number of trips that would be expected based on the generation rates given above and the amount of occupied space. Because both the Fan Pier and Pier 4 sites have existing land uses which generate traffic, the goals must account for existing activity. In the case of the Fan Pier, the existing commuter parking lot will be replaced by the proposed development. As a result, the new development can generate the same number of trips as the existing parking with no net additional impact on the roadway network. Therefore, the goal for the Fan Pier development is to generate no more traffic than is currently generated by the site or than is expected based on the current level of development and the trip generation rates given in Table 45. In other words, the goal for Fan Pier is the larger of 1) the existing volume of traffic from the site or 2) the projected volume of traffic from the project.

The existing Pier 4 restaurant will remain as part of the Pier 4 development. Therefore, the goal for Pier 4 is to have actual traffic from the site be equal to or less than the sum of the existing Pier 4 traffic plus the projected traffic from the additional development on the site.

The goals for the developments may be summarized as follows:

Fan Pier - PM peak hour outbound vehicle-trips equal to or less than the LARGER of:

1. Existing PM peak hour vehicle-trips out of the Fan Pier parking lot; or

2. Formula based on the FEIR vehicle-trip rates for Fan Pier and the amount of occupied space:

   0.50 x (KSF office) + 0.28 x (KSF retail) + 0.23 x (hotel rooms) + 0.15 x (housing units).

Pier 4 - PM peak hour outbound vehicle-trips equal to or less than the SUM of:

1. Existing PM peak hour outbound vehicle-trips from the Pier 4 parking lot; and

2. Formula based on the FEIR vehicle-trip rates for Pier 4 and the amount of occupied space:

   0.61 x (KSF office) + 0.41 (new KSF retail) + 0.23 (hotel rooms) + 0.15 (housing units).

The initial step in the project traffic monitoring program is to establish existing evening peak hour outbound volumes from the Fan Pier parking lot and from the Pier 4 restaurant. Counts should be taken on different days of the week during different weeks in the spring and fall to establish average volumes for a typical work day.

The second step will be the installation of automatic counters during project construction. Counters will be installed at all vehicular entrances to and exits from the sites along Old Northern Avenue. Data collection will commence with occupancy of the first building for each of the respective developments. The number of inbound and outbound vehicles at each location will be recorded by direction for each quarter-hour.

Commencing 15 months after occupancy of the first building, the TMA will prepare annually for the City a Supplemental Traffic Access Plan. Included in that report will be the 85th percentile outbound PM peak hour volume recorded during the previous year for the Fan Pier and for Pier 4. Also included in the annual report will be the amount of occupied space or number of occupied units for each land use in each development on the date the 38th highest hourly volume was recorded. Based on the amount of occupied space reported and the formulas presented above, the goals for each development will be calculated and compared to the recorded volumes. The Supplemental Access Plan will also include a four year forecast of project generated demands.

MONITORING PROGRAM FOR IMPACT AREA TRAFFIC

The purpose of monitoring impact area traffic is to identify actual traffic conditions in the area. If traffic conditions decline below acceptable levels, the monitoring program will allow the City to identify specific deficiencies and plan improvements to be undertaken by the City to correct those deficiencies. Improvements to be considered include intersection treatments, corridor changes, or areawide measures to reduce demand.

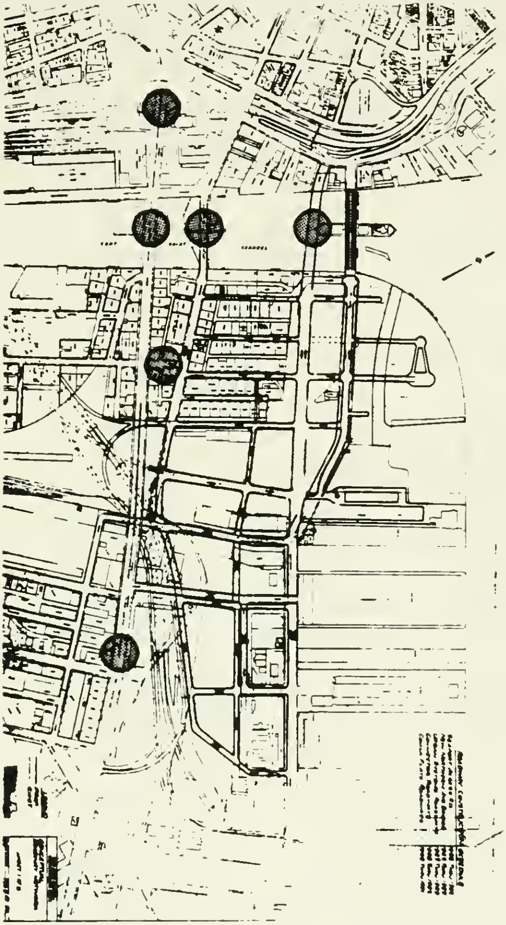
Like the site monitoring program, the areawide monitoring program will focus on traffic volumes exiting the area in the evening peak hour. Key intersection approaches and roadway links across the study area cordon will be monitored. The locations to be monitored are shown in Figure 26 and include:

- New (or Old) Northern Avenue Bridge (westbound approach to the intersection of Northern Avenue and Atlantic Avenue).
- Congress Street Bridge (westbound).
- Summer Street Bridge (westbound).
- Westbound Summer Street approach to Dewey Square.
- Southbound A Street between Congress Street and Melcher Street.
- Eastbound Summer Street approach to D Street.

These locations will provide information about evening peak hour traffic exiting the Northern Avenue development area of South Boston. They will provide volumes across a cordon line along the Fort Point Channel and Summer Street. Included are all major intersections along the cordon line which are impacted in the evening peak hour by traffic from Northern Avenue area development.

Additional off-site monitoring locations at the intersections of the Seaport Access Road connecting ramps with New Northern Avenue may be necessary after these roads are open.

The TMA will fund the installation of permanent volume detection equipment on the identified intersection approaches and roadway links. Installation of the equipment will take place prior to occupancy of the first building (in conjunction with bridge rebuilding or



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Not to Scale

Off-Site Monitoring Locations

Fig. 26

other roadway improvements where possible). The TMA will commence the impact area monitoring program after total exiting traffic from the Fan Pier and Pier 4 sites exceeds volumes currently exiting from the Fan Pier/ Pier 4 parking lots. Volumes will be recorded continuously at 15-minute intervals.

The initial step in the impact area monitoring program will be the establishment of the following existing conditions at the selected intersection approaches and roadways:

1. The evening peak hour approach volume for the 85th percentile weekday;

2. Capacity in vehicles per hour;

3. Green time allocation for signalized intersection approaches; and

4. Stopped delay per vehicle and level of service for signalized intersection approaches based on the information from 1 through 3 above.

As part of the Supplemental Traffic Access Plan, the TMA will annually report to the City the 85th percentile volumes for the previous year for each approach and roadway link being monitored. The 85th percentile volume will be evaluated against the following goals:

1. Stopped delay per vehicle on a signalized intersection approach will not result in deterioration below Level of Service "E" or existing conditions, whichever is worse; or

2. Total approach volume on a roadway link is less than 110 percent of the existing 85th percentile volume.

The calculation of stopped delay per vehicle is based on the allocation of green time to the approach and the capacity of the approach. In order to take account of any changes in these approach characteristics which may have occurred subsequent to the determination of existing conditions, the calculation of stopped delay for the 85th percentile volume will be based on the following:

1. Green time will be the larger of:
    a. existing green time allocated to the approach; or
    b. actual green time allocated to the approach during the monitoring period.

2. Approach capacity will be the larger of:
    a. existing approach capacity; or
    b. actual approach capacity during the monitoring period.

MITIGATION

Results of the monitoring program as reported by the TMA will be used to determine the degree of goal achievement. Should off-site goals fail to be reached, mitigation programs will, under the circumstances set forth below, be implemented by the Fan Pier/Pier 4 developers and the City and State agency responsible for maintenance of the area transportation infrastructure. In broad general terms of mitigation responses to apparent problems, the project developers can be viewed as having control over, and thus responsibility for, project generated travel demands. On the other hand, City and State agencies can more readily exercise control over the supply side of the equation, i.e., capacity of the transportation infrastructure.

Examination of the possible consequences of the on-site demand monitoring and off-site operating conditions monitoring as discussed earlier, indicates four potential results as follows:

	Fan Pier/Pier 4 On-Site Demands	Off-Site Operating Conditions
Case 1	Goal Achieved	Goal Achieved
Case 2	Goal Not Achieved	Goal Achieved
Case 3	Goal Achieved	Goal Not Achieved
Case 4	Goal Not Achieved	Goal Not Achieved

The mitigation efforts expended will depend to a large extent on which case results from the monitoring program. In summary fashion, the following matrix outlines the categories of mitigation approaches which may be appropriate for each of the resultant monitoring cases:

	Fan Pier/Pier 4 Developers	City Agency
Case 1	No Action Necessary	No Action Necessary
Case 2	No Action Necessary	No Action Necessary
Case 3	Mitigate (reduce) Demand Action Required	Increase Capacity Initial Action Required
Case 4	Mitigate (Reduce) Demand Action Required	Increase Capacity Action Required

In both Cases 1 and 2, off-site operating conditions remain equal to or better than predetermined goals, in particular the roadways crossing the cordon line surrounding the project development area remain able to process vehicular demand without failure to achieve reasonable urban area operating conditions during PM peak hours. No action is required in either of these cases.

Cases 3 and 4, where off-site goal failure is reported, requires both project developers and/or government agencies to potentially take action. The initial respondent in Case 3, where on-site respective goals are met, is the City. The first response of the City will be to institute mitigation efforts to increase capacity of the local street system through operational means and to require all members of the TMA which are exceeding their on-site goals to implement mitigation measures intended to conform to all such goals. Should implementation of such measures result in achievement of off-site goals, then, obviously, no further action is required by either the City or TMA members. However, if the City is unable to mitigate operational problems by all practical means of increasing capacity and through requiring conformance with the on-site goals by the TMA members, the project proponent and all TMA members will then be required to reduce demand to the extent the City can allocate responsibility for such off-site goal failure for each TMA member. The degree to which project proponent must mitigate site generated demand will be limited to the degree to which proponent excess traffic contributes to off-site problems. This requires license plate matching studies by the City to determine

percentage and amount of proponent excess traffic passing through the off-site intersection approach which has been identified.

In Case 4, excess traffic demands are observed from the project sites and operating conditions on area roadways are below prestated goals. Project proponents are required here to mitigate demands to bring traffic flow back to on-site goal levels. In this case, no proof of degree of contribution to off-site problems is required, the proponent must achieve its on-site goals. However, the City's responsibility to improve operating conditions back to goal conditions remains. Once the project proponents achieve on-site project goals, the City is responsible for following procedures identified in Case 3.

In cases where project proponent is required to reduce peak hour traffic demands, the proponent may undertake additional studies to determine cause of goal failure. This additional study may include vehicle occupancy counts, employee surveys, or other data collection necessary to determine why the goal has been exceeded. Specifically, the study will be directed at determining which vehicle-trip generation factors are not meeting the Final EIR and Access Plan projections. The proponent will identify the steps to be taken to reduce project generated trips to meet the goal.

Furthermore, in cases where the project proponent is required to reduce peak hour traffic demands, the proponent will take some or all of mitigation measures A through I listed below to the extent necessary to achieve the on- or off-site goals, provided that such measures do not adversely affect financial feasibility of the project. The Authority shall also use reasonable efforts to cause all members of the TMA to implement comparable mitigation measures; if and to the extent the Authority does not impose particular mitigation measures on all members of the TMA, Applicant shall not be required to implement mitigation measures not uniformly imposed.

A. Promotion of flexible work hours for businesses located on the locus.

B. Provision of public transit information, transit pass sales and promotion of employer pass subsidies on the locus.

C. Promotion of ride-share and matching services on the locus.

D. Preferential location for carpool and vanpool parking on the locus.

E. Sponsorship of and differential parking rates for vanpools to and from the locus.

F. Different parking rates for carpool parking on the locus.

G. Provision of land-based facilities on the locus for water taxi/shuttle service to and from the locus.

H. Provision of airport motor vehicle shuttle to and from the hotel on the locus.

I. Differential parking rates on the locus for monthly and daily parking spaces, not available on working days until after 9:30 AM.

After implementation of mitigation strategies A through I, should off-site goals not be attained, then other mitigation measures may be requested by the Boston Redevelopment Authority. If the Authority and the proponent do not agree on mitigation steps to be taken, then the Authority may itself undertake mitigation measures. The project proponents will then, upon request of the Authority, pay to the Authority, in lieu of implementing any additional mitigation measures other than A through I above, which proponent shall continue to be obligated to perform, an amount equal to the sum of a maximum overall payment (the "traffic payment") calculated as 50 cents per square foot of aggregate gross floor area of commercial space in the project, payable in components from time to time to the extent building permits have been obtained for applicable portions of the project less expenses incurred for mitigation measures other than those listed in A through I.

Steps which the Authority will cause the Boston Transportation Department to take to increase capacity and better operating conditions on the existing street system being monitored may include, but not be limited to, the following actions:

- PM peak hour curbside parking restrictions.
- Towing/enforcement of loading and parking controls during PM peak hours.
- Signal retiming at individual intersection.
- Intersection channelization.

- Intersection approach turn lane designations.
- Reversible lane use on Fort Point Channel Bridges.
- Coordinated signal systems on arterial roadways.
- Incident reporting techniques upgraded.
- Quick response methods to incidents.

APPENDIX

CONTENTS

EXISTING STREET SYSTEM

PROJECT TRAVEL DEMAND

BACKGROUND DEVELOPMENT VEHICLE TRAVEL DEMANDS

PROJECT VEHICLE TRIP DISTRIBUTION

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BACKGROUND DEVELOPMENT TRANSIT TRAVEL DEMAND

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INTERSECTION ANALYSIS TECHNIQUES

Existing Street System

The following paragraphs describe in detail the major roadway links and intersections which are part of the study area. Descriptions include number of traffic lanes, alignment, traffic control devices, operating characteristics and land use.

1. Roadways

Northern Avenue - Northern Avenue in the vicinity of the proposed project is a two-lane bi-directional roadway running in an east-west direction from Atlantic Avenue and the Central Artery (I-93) to the Boston Marine Industrial Park. Northern Avenue functions primarily as a local collector/distributor road, providing access to the Industrial Park and to other industrial/commercial development along its length.

The roadway varies in width from 56 to 82 feet and essentially functions as two wide travel lanes separated by a painted double yellow centerline. Pavement condition is basically fair to poor except where the roadway has been recently rebuilt in the vicinity of the World Trade Center. Illumination is provided along the roadway in the vicinity of the project site.

The roadway passes the site on a tangent section over level terrain. Northern Avenue is essentially made up of a series of tangent roadway sections connected by several large radius curves. Lateral obstructions, in the form of signs, utility poles and vegetation, are 2 to 10 feet from the pavement edge.

There are no speed limit signs on Northern Avenue. A number of bus stops are located along Northern Avenue. Metered parking is permitted along both sides of Northern Avenue's western end.

The Northern Avenue bridge across the Fort Point Channel is posted for the following truck weight limits: 9 tons - 2 axles, 12 tons - 3 axles, and 19 tons - 4+ axles.

Congress Street - Congress Street in the vicinity of the site is a two-lane, bi-directional roadway running in an east-west direction from Downtown Boston to B Street in South Boston. Congress Street functions primarily as a local street serving adjacent land uses in the area and providing access to the regional highway system via Atlantic Avenue and the Central Artery.

The roadway varies only slightly in width, essentially consisting of a 52-foot wide paved cross section. There are two through travel lanes in each direction separated by a painted double yellow centerline. Between Atlantic Avenue and A Street, Congress Street consists of three tangent sections with the roadway bending at each end of the Congress Street bridge. The vertical alignment of Congress Street is essentially flat. Lateral obstructions in the form of signs and utility poles are set back 2 to 5 feet from the pavement edge.

Pavement condition is fair with minor breakup of the bituminous concrete roadway surface noticed. Illumination, in the form of mercury vapor lighting mounted on utility poles, is present along Congress Street in the study area. Metered parking is permitted in some sections along both sides of the street. The section between Stillings Street and B Street is an access to several parking areas although the pavement surface is very poor due to cobblestones, railroad tracks, and potholes. The Congress Street Bridge over the Fort Point Channel is posted for the following weight restrictions: 14 tons - 2 axles; 20 tons - 3 axles; 29 tons - 4+ axles.

Summer Street - Summer Street is a four-lane, two-way roadway running in an east-west direction connecting Downtown Boston and South Station with the residential areas of South Boston. Summer Street functions both as a major commuter route and as a collector/distributor of local South Boston traffic, providing access to the abutting industrial uses and to Downtown Boston. South of the Reserved Channel in South Boston, Summer Street becomes L Street.

The roadway varies in width from a 72-foot cross section in the South Station area to a 54-foot cross section in the area of the Reserved Channel Bridge. Pavement markings consist of a double yellow centerline and broken white lane lines. Pavement condition is fair to poor with moderate breakup of the bituminous concrete roadway surface. Roadway illumination is provided by mercury vapor luminaries mounted on utility poles along the edge of the roadway.

The roadway is located on a tangent section over relatively level terrain with the exception of a large radius curve located in the Reserved Channel area. Lateral obstructions in the form of signing and utility poles are placed approximately 2 feet from the pavement edge. Metered parking and several bus stops are located along sections of the street. Vehicular movement is controlled by a series of traffic signals at D Street, Viaduct Street, Dorchester Avenue and Atlantic Avenue. The Summer Street Bridge over the Fort Point Channel is posted for the following weight restrictions: 12 tons - 2 axles, 15 tons - 3 axles, and 19 tons - 4+ axles.

L Street - L Street functions as a local arterial for South Boston, but also carries a substantial amount of regional commuter traffic during peak hours. The southern end of the L Street corridor is characterized by curb parking, pedestrian

activity, and narrow lanes (the street is only 33 feet wide). Parking along both sides of the roadway reduces the effective travelway to only 17 feet. A 17-foot width for two-way traffic flow is generally considered inadequate, particularly when the volume of traffic is heavy. Pavement condition is generally good.

D Street - D Street is a two-lane, bi-directional roadway which connects Summer Street with Broadway, Old Colony Avenue and Dorchester Avenue. This roadway functions as a local connector providing access to the industrial and commercial development along the roadway's northern end. In the vicinity of West Broadway, the roadway features a mix of residential and commercial activity and passes the City's D Street public housing development.

D Street varies somewhat in width but essentially maintains a 30-32 foot paved cross section. Parking is allowed only on the east side of the roadway, but some illegal parking regularly takes place on the west side. With parking on one side only, the available travelway is 22-24 feet wide which is generally adequate. A major problem noted on D Street is the large number of locations where trucking activity conflicts with automobile traffic. The presence of loading docks and tight intersection radii both contribute to delays. Observations of speeds indicate that 25 mph was typical during the morning peak hour, while evening peak hour speeds were considerably lower, averaging 10 mph. The lower travel speeds during the afternoon peak hour are largely the result of truck conflicts and the inability of drivers to pass through more than one traffic signal without stopping. Pavement condition in the southern portion is generally good; in the northern section it is generally fair.

A Street - A Street is a bi-directional two-lane roadway featuring a 34-35 foot pavement width. It experiences a significant amount of truck traffic. A major hindrance to traffic flow is the close spacing of signalized intersections which are not coordinated. Observed peak hour speeds are low, averaging 13 mph during the AM and 6 mph during PM peak hours. Pavement condition is generally fair to poor.

Old Colony Avenue - Old Colony Avenue is a four-lane arterial which functions as a major connector between Morrissey Boulevard and Downtown Boston. It offers direct connections to Dorchester Avenue and D Street. It is primarily commercial in nature; however, some residential properties abut the roadway.

Speed observations on Old Colony Avenue indicate morning peak hour speeds in the vicinity of 28 mph while PM peak hour speeds are lower, at 11 mph. This is primarily attributable to the fact that afternoon peak hour volumes on this roadway are significantly greater than morning peak hour volumes. Pavement condition is generally good.

William J. Day Boulevard - Day Boulevard is a generally east-west roadway connecting Kosciuszko Circle to Fort Independence. It functions both as a commuter route and as a collector for South Boston residents. The road is essentially level with horizontal curves that follow the contours of the harbor.

The roadway consists of a 52 foot wide paved section with two travel lanes in each direction. However, in the vicinity of L Street, parking on the north side limits the two lanes in the westbound direction to one lane. A double yellow centerline separates opposing traffic flows. Illumination is provided and lateral obstructions such as signs, utility poles and vegetation are 1 to 10 feet from the traveled way. Pavement condition is generally good.

Dorchester Avenue - Dorchester Avenue is a two-lane, two-way street running in a north-south direction from Andrew Square to West Broadway in the study area. It provides access to the many businesses along its route and consequently functions primarily as a collector/distributor. Pavement condition is generally fair to good, although a section on the northbound side between Old Colony Avenue and A Street is poor.

2. Intersections

Northern Avenue/Atlantic Avenue - The intersection is located west of the project site just across the Fort Point Channel. Land use in the area is a combination of office and commercial uses. The Central Artery is located west of the intersection parallel to Atlantic Avenue. The intersection of these roadways forms a "T" intersection with a Central Artery on-ramp located directly opposite Northern Avenue and an off-ramp located approximately 300 feet south of the intersection and the on-ramp. A stop sign is posted at Northern Avenue but provides little or no control of heavy peak hour volumes. Lane markings are not present in the intersection and during periods of peak congestion, Northern and Atlantic Avenues both function as three- or four-lane approaches.

Northern Avenue/Ramp Street - This intersection is located east of the project site and is directly south of the Boston Fish Pier. Surrounding land uses are commercial with a variety of restaurants and fish-related industry. The entrance to the Boston Fish Pier is opposite Ramp Street, resulting in an operation similar to a four-legged intersection, with Ramp Street and Fish Pier traffic yielding the right of way to Northern Avenue traffic.

The Ramp Street approach is wide enough to accommodate right and left turn lanes. Parking is permitted on the Ramp Street approach and on both sides of Northern Avenue. Currently, the intersection and a section of Northern Avenue are being reconstructed as part of the development of the World Trade Center at the Commonwealth Pier.

Congress Street at Atlantic Avenue - The intersection of Congress Street at Atlantic Avenue is located west of the site. The Federal Reserve Bank Tower is located in the southeast quadrant of the intersection and the Continental Trailways bus terminal is located in the southwest quadrant of the intersection. A Central Artery northbound on-ramp is located in the northwest quadrant of the intersection. Traffic is controlled by a three-phase traffic signal with a left-turn lag for eastbound Congress Street traffic.

Summer Street at Atlantic Avenue - The intersection has a five-phase (including pedestrian crossings) fixed-time interconnected traffic signal. Summer Street functions as a two-lane approach in each direction with a separate left-turn phase provided for eastbound traffic. Atlantic Avenue becomes one-way north of the intersection and the south leg approaches the intersection with three lanes. Pedestrian activity is high at this intersection with South Station providing access to commuter rail, the Red Line and suburban buses. Bus stops and subway portals are located in the northeast, southeast and southwest quadrants of the intersection. The Federal Reserve Bank is located on the northeast corner and One Financial Center is located on the southwest corner.

Summer Street at Viaduct Street - The intersection of Summer Street at Viaduct Street is located directly south of Commonwealth Pier. Viaduct Street provides a direct connection

to the upper level of the Commonwealth Pier building. Land use at the intersection is primarily office/commercial with the Barnes Building located in the southeast quadrant of the intersection.

The Summer Street/Viaduct Street intersection is a "T" type intersection operating under a two-phase fixed-time signal. Although Viaduct Street is marked for only one lane in each direction, it effectively operates with two approach lanes. Summer Street operates with two travel lanes and one parking lane on both sides.

L Street at East Broadway - The intersection of L Street and East Broadway is located approximately 1-1/2 miles from the project site in the South Boston neighborhood. Land use in the area is a mixture of residential and commercial/retail uses. The intersection functions as a four-way intersection under a five-phase fully-actuated traffic signal controller. All four approaches to the intersection operate with two travel lanes and parking except the westbound approach on Broadway, which has one travel lane. There is a considerable amount of double-parking activity on Broadway.

L Street at William J. Day Boulevard - L Street and William J. Day Boulevard intersect to form a "T" type intersection approximately two miles southeast of the project site. Land use in the area is primarily residential with a recreational use, the L Street Bath House, located at the terminus of L Street.

L Street provides one travel lane and one parking lane in each direction. Day Boulevard is a four-lane facility with two lanes in each direction. On the north side one lane is used for parking. The intersection is controlled by a flashing traffic signal with pedestrian push buttons.

D Street at West Broadway - The intersection of D Street and West Broadway is located approximately one mile south of the project site and one-half mile east of the Red Line Rapid Transit Broadway Station. Residential use is predominant with occasional commercial activity occurring in the vicinity of the intersection.

The D Street and West Broadway intersection functions as a four-way intersection with single-lane approaches on D Street and two-lane approaches on Broadway. Parking is permitted on both sides of West Broadway and on the south side of D Street. Double-parking is prevalent along Broadway. Conflicting traffic movements are controlled by a two-phase, fixed-time, pedestrian-actuated traffic signal.

A Street at West Broadway - The intersection of A Street and West Broadway is a four-way intersection located approximately one mile south of the project site. Land use in the area is a mixture of residential, light industrial, and commercial uses.

The approaches to the intersection each consist of a single travel lane. Parking is located on both sides of West Broadway and on the west side of A Street. Traffic movements are controlled by a two-phase, fixed-time traffic signal with pedestrian actuation.

Bus stops are located on West Broadway west of A Street. The Broadway Red Line station is located one block west of the intersection.

Broadway Bridge at Frontage Road and Albany Street at Herald Street - Broadway Bridge, Frontage Road, Albany Street and Herald Street converge to form two four-legged intersections located on either side of the elevated Central Artery/Southeast Expressway

west of the Broadway Bridge. The Broadway Bridge (east of the Artery) and Herald Street (west of the Artery) consist of two travel lanes in each direction. Frontage Road and Albany Street form a one-way couplet with Frontage Road paralleling the Central Artery in the northbound direction and Albany Street running parallel to the Artery in the southbound direction. Land use along Albany Street is primarily commercial. Traffic is controlled by a multi-phase traffic signal coordinating traffic movements between the two intersections.

West Fourth Street at Frontage Road and East Berkeley Street at Albany Street - West Fourth Street, Frontage Road, East Berkeley Street and Albany Street intersect to form two four-legged intersections underneath the elevated Central Artery/Southeast Expressway west of the Fourth Street Bridge. Land use in the immediate area includes some commercial activity located west of Albany Street.

West Fourth Street is a two-way roadway east of the Central Artery with only the westbound traffic movement permitted underneath the expressway. East Berkeley Street is the extension of West Fourth Street with a one-way westbound traffic flow. Frontage Road and Albany Street form a one-way couplet along either side of the Central Artery. All turn movements between Frontage Road and Albany Street are made possible by two U-turn ramps located north and south of West Fourth Street. Traffic movements are controlled by a three-phase traffic controller coordinating movements between the two intersections.

Dorchester Avenue at A Street and West Fifth Street - Dorchester Avenue, A Street and West Fifth Street intersect to form a four-legged intersection. Land use in the immediate area is retail/commercial with an MBTA maintenance garage located west of Dorchester Avenue. Dorchester Avenue generally consists of

two travel lanes in each direction with parking permitted. A Street and West Fifth Street each carry two travel lanes, one in each direction, with parking permitted on A Street. Traffic movements are controlled at the intersection by a multi-phase interconnected traffic signal with pedestrian actuation.

Old Colony Avenue at D Street - Old Colony Street and D Street intersect to form a four-legged intersection approximately 1-1/2 miles from the project site. Land use in the immediate area is a mixture of strip commercial and residential.

Old Colony Avenue at D Street functions as a four-way intersection with Old Colony Avenue providing two travel lanes in each direction. D Street provides one travel lane in each direction. Conflicting traffic movements are controlled by a three-phase pedestrian-actuated traffic signal.

Andrew Square - Dorchester Avenue, Dorchester Street, Preble Street, Boston Street and Southampton Street converge to form a six-legged intersection. Land use is residential and commercial. The intersection is controlled by a 3-phase fixed time traffic signal. Each approach leg has two lanes with the exception of Dorchester Avenue in the southeast quadrant, which has one approach lane.

A bus and rapid transit station is located on Dorchester Avenue just north of the intersection and bus stops are located on the Preble Street, Southampton Street and Dorchester Avenue approaches. A cab stand is located on the Dorchester Street approach.

Kosciuszko Circle - Columbia Road, Old Colony Avenue, W.J. Day Boulevard and Morrissey Boulevard converge to form a rotary. Columbia Road and Old Colony Avenue have two approach lanes on

the west and north legs, respectively, as do W.J. Day and Morrissey Boulevards on the east and south approaches, respectively. Mount Vernon Street intersects William J. Day Boulevard 300 feet to the east of the rotary. All approaches have yield signs. Land use is primarily transportation related with the Southeast Expressway and Red Line station to the west of the rotary. Paul J. Sanders Stadium is located north of the rotary.

Project Travel Demand

Project travel demand was generated on the basis of trip generation assumptions outlined in the tables below. Table 1 provides daily person-trip rates for office, retail, and hotel land uses. Vehicle-trip rates were used directly for residential uses because no person-trip rate data were available. The office and retail person-trip rates were obtained from the International Place EIR and are based on data from actual surveys and previous studies including "Parking in Central Boston," 1983; "Copley Place Final EIR/EIS," 1980; and "An Access Oriented Parking Strategy for the Boston Metropolitan Area," 1974. The hotel rates were taken from the Traffic Impact Study and Access Plan for Parcel 7 in the Government Center and are based on a survey of the Holiday Inn on Cambridge Street in Boston.

Table 2 shows the mode split factors used for office, retail, and hotel uses. The office and retail work-trip factors for both Fan Pier and Pier 4 and the office and retail non-work trip factors for Fan Pier are those used in the Draft EIR. They reflect a high transit mode share, which is expected to be prevalent in the Northern Avenue area of South Boston as it develops as an extension of Downtown. High transit shares can be expected because of limited availability of parking, the high cost of parking, and good transit connections via a shuttle system to

TABLE 1
DAILY PERSON-TRIP GENERATION RATES

Use	User	In	Out	Total
Office	Work	4.40	4.40	8.80
	Non-Work	2.35	2.35	4.70
	Total	6.75	6.75	13.50
Retail	Work	2.75	2.75	5.50
	Non-Work	16.40	16.40	32.80
	Total	19.15	19.15	38.30
Hotel	Work	1.00	1.00	2.00
	Non-Work	5.94	5.94	11.88
	Total	6.94	6.94	13.88

Source: Office & Retail - International Place EIR
Hotel - Parcel 7 Traffic Impact Study and Access Plan (based on survey at Holiday Inn, Cambridge Street, Boston)

Downtown. Although expected to be relatively high, the projected rates for the Northern Avenue area are below the transit work-trip rates of 70 to 80 percent reported for many Downtown office buildings in "Parking in Central Boston." Because of the Fan Pier's closer proximity to Downtown transit, a somewhat lower transit factor was used for Pier 4 office trips than for Fan Pier. Although some work trips from the projects' residential uses to the office and retail uses are expected, the number is a small proportion of the total work trips and was, therefore, not included as walking trips.

The office and retail non-work trip factors for Pier 4 reflect higher auto usage than for Fan Pier because of the ample supply of short-term parking proposed for Pier 4 (see Parking Impacts under Probable Project Impacts). Hotel non-work rates are based on averages from surveys of the Marriott Long Wharf and Holiday Inn. The higher share of auto trips for hotel work trips compared to retail work trips is based on the dedicated hotel parking provided in each development.

TABLE 2
MODE SPLIT PERCENTAGES

		Mode				
		Auto		Transit		
Use	User	Fan Pier	Pier 4	Fan Pier	Pier 4	Walk
Office	Work*	32%	37%	68%	63%	0%
	Non-Work**	40%	65%	45%	20%	15%
Retail	Work*	15%	15%	85%	85%	0%
	Non-Work***	25%	40%	35%	20%	40%
Hotel	Work***	30%	30%	70%	70%	0%
	Non-Work***	60%	60%	15%	15%	25%

For non-work trips, a significant share of walking trips is expected because of the mixed-use nature of the project. The percentages of office and retail walk trips match the shares used in the International Place, 500 Boylston Street, and Parcel 7 EIRs. The proportion of walking trips for hotel is based on survey results from the Marriott Long Wharf and the Holiday Inn on Cambridge Street.

Table 3 indicates the percentage of daily arrivals and departures expected in the peak hours. The factors for office and retail uses are taken from The Copley Place Final EIR/EIS, while those for the hotel use are based on peak hour person-trips observed at the Marriott Long Wharf. The breakdown between work and non-work hotel trips was based on that used for the Parcel 7 analysis.

The base peak hour factors were modified slightly to generate a small number of outbound work trips in the morning and inbound work trips in the evening. Similar adjustments were made in non-work-rates. These adjustments were based on counts at the Post Office Square Garage and the Fan Pier lot which show some travel in the off-peak direction in the peak hours.

TABLE 3
PERCENTAGE OF DAILY IN AND OUT TRIPS DURING PEAK HOURS

		WORK		NON-WORK	
		AM Peak	PM Peak	AM Peak	PM Peak
Office	In	55%	2%	10%	2%
	Out	1%	55%	1%	10%
Retail	In	10%	10%	1%	5%
	Out	1%	20%	1%	10%
Hotel	In	5%	2%	7%	12%
	Out	1%	6%	8%	9%

Source: Office & Retail - Copley Place EIR.
Hotel - Based on peak hour person-trips for Marriott Long Wharf with work and non-work distribution based on Parcel 7 Traffic Impact Study.

Vehicle occupancy rates are shown in Table 4. The rates for office and retail are the same as those used in International Place, while those for hotel represent averages from the Marriott Long Wharf and Holiday Inn Boston.

TABLE 4
VEHICLE OCCUPANCY FACTORS

Office	Work	1.8
	Non-Work	1.4
Retail	Work	1.4
	Non-Work	1.9
Hotel	Work	1.4
	Non-Work	1.5

Source: Office & Retail - International Place EIR.
Hotel - Marriott Long Wharf and Holiday Inn Surveys.

As noted above, person-trip rates for housing were not available. Therefore, vehicle-trip rates were used directly.

Listed in Table 5 are the rates used, which were taken from the Rowes Wharf EIR and are based on a survey done at Harbor Towers.

TABLE 5
HOUSING VEHICLE-TRIP ENDS PER DWELLING UNIT

Daily	In/Out	3.09
AM	In	0.08
	Out	0.15
PM	In	0.15
	Out	0.15

Source: Rowes Wharf EIR (based on Harbor Towers survey).

All the factors listed in Tables 1 through 5 were combined to generate vehicle-trip generation rates for Fan Pier and Pier 4. These rates are shown in Table 6.

TABLE 6
PROJECT VEHICLE-TRIP GENERATION RATES

	Office*		Retail*		Hotel**		
	Fan Pier	Pier 4	Fan Pier	Pier 4	Fan Pier	Pier 4	Residential
Daily							
In	1.45	2.00	2.45	3.75	2.59	2.49	1.54
Out	1.45	2.00	2.45	3.75	2.59	2.49	1.54
Total	2.90	4.00	4.90	7.50	5.18	4.98	3.08
AM Peak Hour							
In	0.50	0.61	0.05	0.06	0.18	0.17	0.08
Out	0.01	0.02	0.01	0.01	0.19	0.19	0.15
Total	0.51	0.63	0.06	0.07	0.37	0.36	0.23
PM Peak Hour							
In	0.03	0.04	0.14	0.20	0.29	0.29	0.15
Out	0.50	0.61	0.27	0.40	0.23	0.22	0.15
Total	0.53	0.65	0.41	0.60	0.52	0.51	0.30

* Trips per 1,000 square feet.
** Trips per room.
*** Trips per unit.

Background Development Vehicle Travel Demands

Vehicle-trip generation from those background developments for which no traffic projections were available was calculated directly. For downtown developments, trip generation factors used for International Place were applied (see Table 7). In South Boston, four different sets of factors were used depending upon the nature of the background development and its location.

TABLE 7
MODE SPLIT PERCENTAGES FOR DOWNTOWN BOSTON BACKGROUND DEVELOPMENT

		Percent Trips By		
Use	User	Auto	Transit	Walk
Office	Work	30.0	70.0	0.0
	Non-Work	27.5	57.5	15.0
Retail	Work	30.0	70.0	0.0
	Non-Work	27.5	32.5	40.0

Source: Office & Retail - International Place EIR.

Trip generation factors applied to Fan Pier were used to project Cabot, Cabot & Forbes trips. Factors applied to Pier 4 were used to generate trips for Commonwealth Pier, Pier 6 and Commonwealth Flats. Generation rates for Boston Wharf were based on existing trip generation characteristics for South Boston.

Finally, it was necessary to develop trip generation rates for industrial and manufacturing uses proposed for Boston Marine Industrial Park (BMIP), Gillette, and Wang. The Building 114 EIR used Institute of Transportation Engineers (ITE) rates for light industrial uses modified for South Boston transit usage and vehicle occupancy rates. That same approach was used here with somewhat different rates applied to Downtown and South Boston.

Table 8 shows the ITE industrial rates as well as the industrial rates used for South Boston and Downtown. The ITE rate reflects no transit usage and a vehicle occupancy rate (VOR) of 1.3. The South Boston rates represent a 20 percent reduction of the ITE rates to reflect a 10 percent transit use and a VOR of 1.46 (based on surveys reported in the Building 114 EIR). The Downtown rate represents a 60 percent reduction to reflect 60 percent transit usage and a VOR of 1.42 (based on assumptions used in the 1983 report "Parking in Central Boston").

TABLE 8
INDUSTRIAL BACKGROUND DEVELOPMENT
TRIP GENERATION RATES*

		ITE**	South Boston	Downtown
Daily		5.46	4.37	2.02
AM Peak Hour				
In		0.85	0.76	0.35
Out		0.15	0.13	0.06
	Total	1.11***	0.89	0.41
PM Peak Hour				
In		0.32	0.32	0.15
Out		0.63	0.63	0.29
	Total	1.18***	0.95	0.44

* Trips per 1,000 square feet.

** Institute of Transportation Engineers Code 110.

*** In and Out rates do not add to peak hour totals because the values are based on a different sample of projects. South Boston and Downtown peak hour rates are derived from ITE peak hour totals.

Table 9 lists projected daily and peak hour volumes for each background development. The source of the volumes is given for each development.

TABLE 9
1995 BACKGROUND DEVELOPMENT VEHICLE-TRIP GENERATION

Project	Daily Traffic	AM Peak Hour In	AM Peak Hour Out	PM Peak Hour In	PM Peak Hour Out
South Boston					
1. Commonwealth Pier 5	4,302	623	84	133	567
2. Fish Pier 6	570	105	4	9	103
3. Commonwealth Flats	3,011	542	46	103	509
4. Cabot, Cabot & Forbes	1,503	249	7	16	251
5. Boston Wharf Company*	16	-89	-28	-126	0
6. Gillette	459	80	14	34	66
7. Boston Marine Industrial Park	2,731	475	81	200	394
Downtown Boston					
8. Rowes Wharf	3,340	240	81	126	226
9. International Place	4,656	770	0	18	800
10. 260 Franklin Street	1,162	232	0	0	232
11. 265 Franklin Street	1,248	250	0	0	250
12. One Financial Center	1,850	389	0	0	389
13. Marketplace Center	1,059	283	0	16	327
14. Exchange Place	2,140	751	0	0	751
15. 75 State Street	1,726	252	0	0	252
16. 101 Federal Street	1,334	224	0	4	232
17. 150 Federal Street	1,224	215	0	3	219
18. 99 Summer Street	681	128	3	7	128
19. 101 Arch Street	1,026	145	4	16	158
20. Wang Laboratories	202	35	6	15	29
21. 20 & 21 Custom House Street	634	101	0	3	106
22. Kingston Street/ Bedford Street Garage	1,762	316	0	3	320
23. Lincoln Street/Essex Street Site	937	158	0	3	163
24. 125 Summer Street	1,229	218	0	2	222
25. 125 High Street	3,442	612	17	38	622

---

* Negative values represent a reduction in trips resulting from the loss of industrial uses and conversion of the space to other uses.

Sources:
1. Commonwealth Pier 5 EIR
2.-7. Calculated by Vanasse/Hangen Inc.
8. Rowes Wharf EIR.
9.-14. International Place EIR
15. 99 State Street (now 75 State Street) Draft Traffic Impact Study, Vanasse Hangen Brustlin, Inc.
16. Traffic Analyses by HMM Associates.
17. 150 Federal Street Traffic Impact Study, Vanasse Hangen Brustlin, Inc.
18.-20. Calculated by Vanasse Hangen Brustlin, Inc.
21. Milk and Broad Street Development Traffic Impact Study and Access Plan, Vanasse Hangen Brustlin, Inc., May, 1986.
22.-23. Calculated by Vanasse Hangen Brustlin, Inc.
24. 125 Summer Street, Transportation Impact Study and Access Plan, Vanasse Hangen Brustlin, Inc., July, 1986.
25. 125 High Street, Transportation Impact Study and Access Plan, Vanasse Hangen Brustlin, Inc., November, 1986.

In order to account for traffic growth from non-Downtown development or from additional Downtown developments not specifically identified, a generalized growth factor was also used. Past trends in the growth of Downtown traffic were reviewed to determine a growth factor. Cordon Count data for 1982 indicate that the number of privately-owned vehicles entering Downtown in 1982 was 15 percent higher than the number entering in 1972, although the increase in passengers was only 5.5 percent. The larger increase in vehicle crossings was the result of a decline in vehicle occupancy from 1.59 to 1.42 persons per vehicle. For the period to 1995 it was assumed that there would be a somewhat higher rate of growth in passengers but that there would be no further decline in the vehicle occupancy rate. Therefore, a five percent increase in background traffic was used in addition to distributing specific background development volumes to the roadway network.

Project Vehicle-Trip Distribution

The distribution of project vehicle-trips was based on a license plate survey done by the CTPS of the commuter parking lots at Fan Pier and on the Cabot, Cabot & Forbes property just across Northern Avenue from the Fan Pier. The cities and towns of origin were matched with major routes into Boston. The final distribution shown in Table 10 was established by apportioning Boston core trips (nine percent of the total) to all major corridors except the Massachusetts Turnpike for which there is no inbound entrance or outbound exit between Brighton and Downtown. Table 9 compares project trip distribution by route with trip distribution by compass direction from the 1982 Cordon Count and the International Place EIR. The distribution to the south corresponds almost exactly. However, the Fan Pier and Pier 4 distribution is somewhat heavier to the west and lighter to the north. Part of this difference may result from the assignment of

trips from northwestern communities to Route 2 which is listed as a westerly route. Assignment of trips from the south and west to the local South Boston street system was based on the major route into the study area and consideration of the travel times shown in Table 11.

TABLE 10
COMPARISON OF TRIP DISTRIBUTION FROM LICENSE PLATE SURVEY,* AND 1982 CORDON COUNT AND INTERNATIONAL PLACE EIR

License Place Survey		1982 Cordon Count		International Place	
Route	Percent	Direction	Percent	Direction	Percent
Route 1	11	Northeast	14	Northeast	14
I-93 North	14	North	12	North	14
Route 3 North	6	Northwest	10	Northwest	9
Total North	31	Total	36	Total	37
Route 2	8				
Turnpike	15	West	17	West	17
Total West	23	Total	17	Total	17
Boston St./ Dorchester Ave.	2	Southwest	22	Southwest	22
S.E. Expressway	44	Southeast	25	Southeast	24
Total South	46	Total	47	Total	46
TOTAL	100.00	TOTAL	100	TOTAL	100

---

* Survey of cars parked at Fan Pier and Cabot, Cabot and Forbes lots.

TABLE 11
TRAVEL TIME SUMMARY

	Route	Average Time (min:sec)	Distance (Miles)
Inbound (AM)			
#1	Morrissey Blvd./Day Blvd./L St./ Summer St./Viaduct St./Comm. Pier	12:07	4.8
#2	Morrissey Blvd./Old Colony Ave./ D St./Summer St./Viaduct St./ Comm. Pier	9:32	3.8
#3	Morrissey Blvd./Old Colony Ave./ A St./Congress St./Sleeper St./ Northern Ave./Comm. Pier	14:04	5.0
#4	Southeast Expressway/Frontage Rd./ West Fourth St./A St./Congress St./ Sleeper St./Northern Ave./Comm. Pier	13:56	4.5
#5	Southeast Expressway/Atlantic Ave./ Northern Ave./Comm. Pier	11:47	4.6
Outbound South (PM)			
#1	Comm. Pier/Viaduct St./Summer St./ L St./Day Blvd./Morrissey Blvd.	12:12	4.8
#2	Comm. Pier/Viaduct St./Summer St./ D St./Old Colony Ave./Southeast Expressway	11:46	3.8
#3	Comm. Pier/Northern Ave./Sleeper St./ Congress St./A St./Old Colony Ave./ Southeast Expressway	13:50	5.0
#4	Comm. Pier/Northern Ave./Sleeper St./ Congress St./A St./West 4th St. Bridge/Southeast Expressway	17:12	4.5
#5	Comm. Pier/Northern Ave./Sleeper St./ A St./West Second St./Broadway Bridge/Southeast Expressway	16:23	4.7
#6	Comm. Pier/Northern Ave. Bridge/ Atlantic Ave./Surface Road/Southeast Expressway	22:12	5.3

TABLE 11 (Continued)
TRAVEL TIME SUMMARY

Route	Average Time (min:sec)	Distance (Miles)
Outbound West (PM)		
#1 Comm. Pier/Northern Ave./Atlantic Ave./ Surface Road/Central Artery/Mass. Pike	9:30	1.7
#2 Comm. Pier/Northern Ave./Sleeper St./ Congress St./Dorchester Ave./Summer St./Surface Road/Mass. Pike	18:10	2.7
#3 Comm. Pier/Northern Ave./Sleeper St./ Congress St./A St./West Second St./ Broadway Bridge/Central Artery/ Mass. Pike	9:22	2.4

SOURCE: Field observations made during data collection effort for Commonwealth Pier Five EIR.

Trip Assignment with Third Harbor Tunnel

The traffic analysis was done for future conditions with the proposed Seaport Access Road and Third Harbor Tunnel, but without depression of the Central Artery. The addition of the Seaport Access Road and Third Harbor Tunnel to the network results in a considerable diversion of traffic from the local street system. Each route was analyzed to compare the relative advantage of using the Seaport Access Road/Third Harbor Tunnel versus the local street system. Almost two-thirds of project traffic was projected to use the Seaport Access Road. This diversion is comparable to a projection used by the CTPS in a Northern Avenue analysis done in 1984. Table 12 shows the two distributions.

TABLE 12
PROJECT DISTRIBUTION WITH SEAPORT ACCESS ROAD

	Inbound		Outbound	
Direction	Project	CTPS*	Project	CTPS*
Northern Avenue East	6%	3%	6%	5%
Seaport Access Road	60%	63%	63%	61%
Pittsburg/Sleeper Streets**	9%	6%	4%	6%
Atlantic Avenue South	19%	22%	--	--
Oliver Street	6%	6%	--	--
Atlantic Avenue North	--	--	7%	6%
Central Artery North	--	--	20%	22%
Total	100%	100%	100%	100%

* Northern Avenue Technical Memo 3, Central Transportation Planning Staff, September 24, 1984.

** Sleeper Street will be one-way outbound while Pittsburg Street will be one-way inbound.

Background Development Transit Travel Demand

Future background growth of rapid transit demand was based on all the Downtown and South Boston background developments identified in Table 9 as well as additional developments in Boston outside the Financial District and in Cambridge. All background developments for which rapid transit trips were generated are listed in Table 13. In addition to the demand from these developments an additional one percent growth factor was used to generate 1995 No-Build rapid transit ridership.

Data Collection on the MBTA Red and Green Lines

Objectives

Because of the current shortage of reliable rolling stock on the Red and Green Lines, scheduled frequencies sometimes cannot be achieved during peak hours. To obtain an accurate measure of PM peak hour line capacity for this report, a series of independent observations was made in September and October, 1986.

While the primary objective was to measure capacity, passenger counts were also taken. Those results, which were similar to the MBTA's own ridership data, were used in this report since they were the most recent available point counts on those lines.

Procedures

Red Line ridership was estimated southbound departing from Broadway Station and northbound departing from Park Street Station. Train movements were recorded in both directions at each location. Data collection at both stations took place on September 19, 29 and 30, and on October 1, 2, and 3, between 4:00 and 6:15 PM.

TABLE 13
TRANSIT BACKGROUND DEVELOPMENTS

South Boston

Commonwealth Pier
Fish Pier
Commonwealth Flats
Cabot, Cabot & Forbes
Boston Wharf Co.
Gillette
Boston Marine Industrial Park

Downtown

Rowes Wharf
International Place
260 Franklin Street
265 Franklin Street
One Financial Center
Marketplace Center
Exchange Place
75 State Street
101 Federal Street
150 Federal Street
99 Summer Street
101 Arch Street
Wang Laboratories
Parcel 7
125 Summer Street
20 & 21 Custom House Street
125 High Street
Bedford Street Garage
Essex Street/Lincoln Street Site
500 Boylston Street

Cambridge

University Park
East Cambridge
Kendall Square
Mass Ave. Corridor
Cambridgeport
MIT
Alewife

Green Line capacity and ridership were estimated westbound departing from Arlington Station. Green Line data collection took place on September 22, 26, and 30, and on October 1 and 2, between 4:00 and 6:15 PM.

To assure data quality, comments on the data collection plan's basic elements (e.g., dates, times, locations and procedures) were obtained in advance from the MBTA Operations Department. Data forms were pre-tested at all three locations on September 10, and a pre-test/training session was held on September 17 with the data collectors (all of whom had previous experience with transit data collection).

Results

At all locations, the peak ridership hour was found to be 4:45 to 5:45 PM. For that peak hour on all survey days, southbound throughput at Broadway Station ranged from 76 to 91 in-service cars (on 19 to 23 trains), with an average of 64 cars, while northbound throughput leaving Park Street averaged 61 in-service cars, with similar variance. At Arlington Station, throughput in the peak hour ranged from 52 to 64 in-service cars, with an average of 58. The number of Green Line trains ranged from 33 to 39, with an average of 36.

On days when peak-hour train throughput is very low, passenger throughput during that hour is constrained, and therefore is not an accurate measure of the demand for service. Because it was recognized that a shortage of supply interferes with the measurement of demand, each line's ridership estimates were obtained from the day when its peak hour capacity (i.e., the throughput of cars) was highest.

On the Green Line, LRVs observed to be 100% full were assumed to be carrying 200 passengers, based on information from the MBTA. On the Red Line, the capacity figures used were 232 for the 6-door "Silverbird" cars, and 263 for the 8-door "Bluebird" cars. This resulted in PM peak hour ridership estimates of 7,136 for the Red Line/North, 11,188 for the Red Line/South, and 10,008 for the Green Line/West.

Intersection Analysis Techniques

1. Signalized Intersections

Levels of Service for signalized intersections were determined using the Critical Movement Analysis procedure which relates the lane utilization on each approach to the total capacity of the intersection. The sum of critical volumes for all approaches is compared to the intersection capacity to establish a volume-to-capacity ratio which quantifies the degree of intersection utilization. The capacity of the intersection is the maximum volume of vehicles that may be processed through the intersection from all approaches during a given period of time under prevailing roadway and traffic conditions. The critical lane volume (CLV) is the volume or combination of volumes during each signal phase which utilizes the greatest amount of the available green time. A signal phase is a part of the signal cycle allocated to any single movement or combination of movements.

In a simple four-way intersection in which each street has one phase for all moves in each direction, the critical lane volume is usually the larger of the two sums of the through movements plus the opposing left turn. The critical lane volumes for each phase are summed together and compared to the capacity of the intersection. The resulting volume-to-capacity ratio

establishes the level of service based on the criteria shown in Table 14. The higher the volume-to-capacity ratio, the greater the percentage of green time that will be utilized processing vehicles and the greater the average delay experienced by all vehicles in clearing the intersection. At capacity, all green time is utilized processing vehicles and many vehicles have to wait through more than one light cycle before clearing the intersection. As a result, long queues develop on the approaches as vehicles arrive at a faster rate than they can be processed through the intersection.

TABLE 14
LEVEL OF SERVICE CRITERIA FOR
SIGNALIZED INTERSECTIONS

	Maximum Sum of Critical Volumes			
Level of Service	Two Phase*	Three Phase	Four or More Phases	Volume-to-Capacity Ratio
A	900	855	825	0.00-0.60
B	1,050	1,000	965	0.61-0.70
C	1,200	1,140	1,100	0.71-0.80
D	1,350	1,275	1,225	0.81-0.90
E	1,500	1,425	1,375	0.91-1.00

* A phase is the portion of the light cycle allocated to a particular movement or combination of movements. As the number of phases increases, total intersection capacity declines because of lost time between signal changes.

Source: Transportation Research Board, Transportation Research Circular Number 212, Interim Materials on Highway Capacity, Washington, D.C., January 1980.

The capacities shown in Table 14 have been adjusted downward for intersections where exclusive pedestrian phases are provided or where large numbers of pedestrians disrupt traffic flows.

Adjustments were also made for intersections with high percentages of truck traffic. Because of their slower acceleration and reduced maneuverability, fewer trucks than cars can be processed through an intersection.

2. Unsignalized Intersections

In capacity calculations for an unsignalized intersection or driveway, the assumption is made that the major street traffic is not affected by the minor street movements.[1] The capacity of the intersection is a function of: the right turns into the major road; the left turns from the major road; through traffic crossing the major road; left turns into the major road; and the number of acceptable gaps in the through traffic streams which allow turning or crossing vehicles to pass through the intersection. The critical acceptable gap is defined as "that gap for which an equal number of drivers will accept a shorter gap as will reject a longer gap". Based on a gap acceptance function,[2] the capacity of the minor approach to an intersection can be determined. The difference between available capacity and existing demand is defined as reserve capacity and is used as the criterion for determining level of service. Table 15 summarizes the relationship between level of service, reserve capacity and expected traffic delay.

---

[1] Transportation Research Board, Transportation Research Circular Number 281, Proposed Chapters For the 1985 Highway Capacity Manual, Washington, D.C., June 1984.

[2] Transportation Research Board, Special Report 165, Traffic Flow Theory, Washington, D.C., 1975.

TABLE 15
LEVEL OF SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS

Reserve Capacity	Level of Service	Expected Delay To Minor Street Traffic
400 or more	A	Little or no delay
300 to 399	B	Short traffic delays
200 to 299	C	Average traffic delays
100 to 199	D	Long traffic delays
0 to 99	E	Very long traffic delays
*	F	*

* When demand exceeds capacity, severe congestion may result and affect other traffic movements.

Source: Transportation Research Board, Transportation Research Circular Number 281, Proposed Chapters for the 1985 Highway Capacity Manual, Washington, D.C., 1984.

3. Rotaries

Volume-to-capacity ratios for Columbia Circle are based on analyzing the weaving volumes within each weaving section of the rotary. Criteria on which the analysis is based is presented in the Transportation & Traffic Engineering Handbook.[3] The actual or projected volumes were compared to the rotary section capacity and the traffic operation is expressed as a percent of section capacity.

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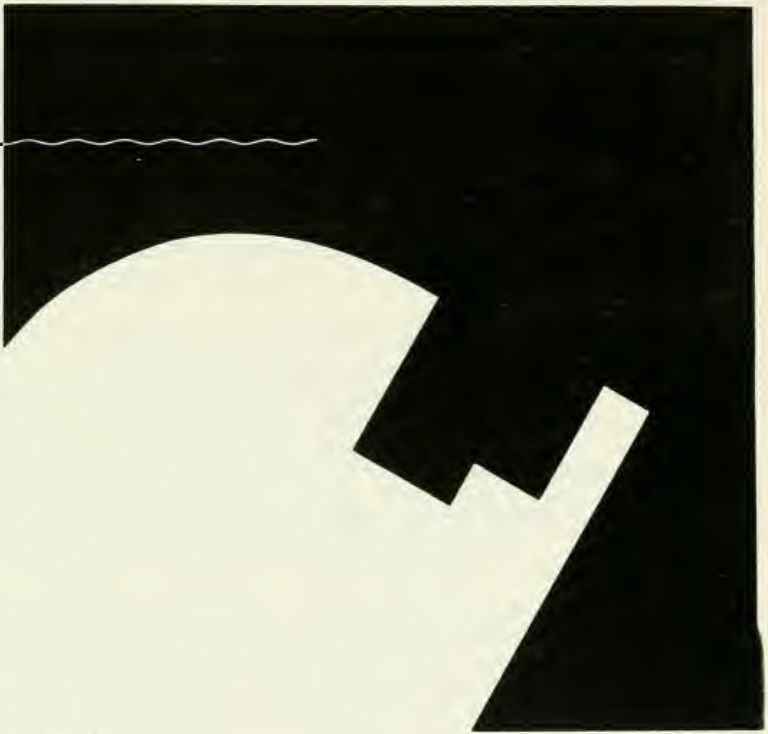
[3] Institute of Transportation Engineers, Transportation & Traffic Engineering Handbook; 1976.

Infrastructure

Fan
Pier
Development

Pier
4
Development



Submitted to:
The Boston Redevelopment Authority

Developers:
HBC Associates (Fan Pier)
The Boston Mariner Company (Pier 4)

MAR 16 1987

Fan Pier and Pier 4

Executive Summary

Infrastructure Report

Prepared for the Boston Redevelopment Authority

March 1987

Preface: Boston's infrastructure needs, like those of most older Northeastern cities, are great. Water, sewer, drainage and utilities services have been in place for many years and, in some cases, must be refitted to deal with the demands of growth and development. Additionally, water quality in the harbor has become an over-riding policy issue because of new federal and state mandates to clean up the harbor. Any new developments, like Fan Pier and Pier 4, require a special sensitivity to infrastructure needs. The Fan Pier and Pier 4 developers have worked to ensure that the projects enhance Boston's future infrastructure needs, and are doing so at no public expense.

Aims: The Fan Pier and Pier 4 developers are committed to helping to improve the quality of water in Boston Harbor, and to upgrading utility and other services in the immediate area. To accomplish this, they will undertake a whole series of measures, including improvement, reconstruction and/or construction of sewage lines, water lines and drainage facilities, planning of gas, electric and telephone service expansion, and other activities. The design of these systems is being guided by areawide plans, prepared at the developers' expense, which have been subject to extensive agency/utility review and coordination.

Specific Measures: The development of Fan Pier and Pier 4 will mean substantial improvements to the infrastructure systems of South Boston and nearby areas of the city. The highlights of the new systems, and the developers' commitment to implementing them, are presented below (and in greater detail in the body of this report).

Water Supply. The developers will upgrade high service and low service water systems along Northern Avenue, in addition to building all new water systems on the development sites. In upgrading the high service water system, the developers will clean and line with cement the existing 16-inch high service main. An upgrade of the low service water system includes a new 12-inch low service line for the length of existing Northern Avenue. Planning, engineering, and construction of these systems is being done in consultation with the Boston Water & Sewer Commission. To reduce water demand and to minimize sewage flows, the developers will conduct an in-depth study of water conservation that exceeds the state building code requirements.

Sanitary Sewer. The developers will reconstruct the sanitary sewer in Northern Avenue in addition to building all new sewer facilities on Fan Pier and Pier 4. The developers are working toward agreements with Massport to allow, in the short-term, use of Massport's sewer along Northern Avenue and, over the long-term, a new sewer crossing Massport's Commonwealth Flats. To rectify long-standing problems with off-site sewage systems, the developers have committed to reconstruct a portion of the North Branch of the South Boston Interceptor at the corner of A and West First Streets in South Boston. This will eliminate current dry weather combined sewer overflows and will dramatically reduce the incidence and volume of wet weather overflow.

Storm Drainage. An entirely new drainage system on the sites will be built by the developers, including water pollution abatement facilities. Off-site, the developers will fund the reconstruction of a portion of the drainage and sewer facilities south of existing Northern Avenue to the extent necessary to satisfy the 2:1 Inflow/Infiltration (I/I) reduction goals of the Massachusetts Water Resources Authority and the Boston Water & Sewer Commission for the projects. The combined effect of the storm drainage and sewer improvements will be to reduce substantially combined sewer overflows in comparison with present conditions. These improvements will lead to a significant improvement in the water quality of Boston harbor.

Gas, Electric and Telephone. The developers will continue their close coordination with various utility companies. Costs for installation of new systems will be borne by the utilities based upon expected revenues from the Fan Pier and Pier 4 developments.

Conclusion: The Fan Pier and Pier 4 developments are providing a model for responsible infrastructure planning and implementation which should set an example for other developments in the city. The developers have committed several million dollars to the improvement of areawide infrastructure. The results will benefit service provision to South Boston and the city as a whole, while sewer and drainage system improvements will lead to a better, cleaner Boston harbor, all at private, not public, cost.

Fan Pier Development/Pier 4 Development

INFRASTRUCTURE

Developers:
HBC Associates (Fan Pier)
The Boston Mariner Company, Inc. (Pier 4)

Prepared by:
Skidmore, Owings & Merrill
Parsons, Brinckerhoff, Quade & Douglas

Submitted to:
The Boston Redevelopment Authority

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I INTRODUCTION

The purpose of this report is to present information on infrastructure planning and developer commitments related to the Fan Pier and Pier 4 Developments. The report has been prepared at the request of the Boston Redevelopment Authority (BRA) to describe planning for areawide infrastructure systems, to present the analysis of project effects on public and private utilities, and to document commitments made to mitigate any impacts. The Developer commitments--finalized during the public review process and confirmed in this document--will result in an improvement to water quality in Boston Harbor with the construction of the Fan Pier and Pier 4 Projects.

Four chapters and related appendices make up this report. Following this introductory chapter is a reprint of the Infrastructure chapter from the Fan Pier and Pier 4 Final Environmental Impact Report (EIR) (November 1986). The technical analysis and mitigation measures, which constitute the EIR Chapter, provided the basis for the coordination process with state and local agencies that led to the series of developer commitments presented in Chapter Three.

Chapter Three, Water and Sewer Commitments, documents in one place all infrastructure agreements made by the Developers. The program of infrastructure improvements to be undertaken by the Developers addresses areas of particular concern to both state and municipal authorities, including: sewer system capacity, combined sewer overflows, 2:1 Inflow and Infiltration

(I/I) reduction, off-site connections, separated sewer and storm drainage systems, and water conservation measures. The commitments will result in an improvement to water quality in Boston Harbor.

The fourth chapter, Infrastructure Schedule, summarizes the responsibilities and timing associated with each proposed utility system plan.

The appendices, which conclude this report, reprint the three letters that provide the official record of signed commitments between the Developers and the Boston Water and Sewer Commission (BWSC) and the specific detail of all the Developers' water and sewer infrastructure commitments made in this report. Also attached as appendices are three letters on the provision of gas, electric, and telephone service to the Projects.

II INFRASTRUCTURE ANALYSIS AND MITIGATION MEASURES

INTRODUCTION

This chapter is a reprint of the Infrastructure chapter from the Fan Pier and Pier 4 Final EIR (November, 1986). This technical analysis and the resulting mitigation measures led to the series of Developer commitments presented in Chapter Three.

SUMMARY

The Fan Pier and Pier 4 Developments are expected to generate wastewater at the rate of approximately 790,000 gallons per day, with a peak waste water flow of 1,450,000 gallons per day. Sewage from the two Projects will be discharged to a new Boston Water and Sewer Commission Sanitary Sewer in Northern Avenue. Storm drainage for the two developments will be discharged to the Boston Harbor by way of on-site collection systems, with appropriate water quality control measures. Water demand for the two developments has been estimated at 880,000 gallons per day. Project demand for these utilities, as well as electric, gas, and telecommunications systems demand, will exceed existing systems capacity in the absence of any future improvements.

Final EIR infrastructure analyses for the Fan Pier and Pier 4 Developments have centered on the investigation of the long-term areawide infrastructure planning for the Fort Point Channel/Commonwealth Flats area. In on-going consultations with public agencies and utility providers and the public and private development interests in the area, the developers have researched and presented conceptual plans for water, sewer, and other utility systems. Implementation of these

areawide system improvements will require continuing coordination and engineering efforts. However, the developers, the utility providers, and major future users have agreed in principal to the infrastructure plans proposed in this Final EIR. Furthermore, the developers have committed to participate in the continuing coordination effort and the construction of needed facilities.

Construction and Operations Issues
Infrastructure

INTRODUCTION

The purpose of this analysis is: to describe the existing sanitary sewer, water supply, storm drainage, electric, gas and telecommunications systems in the development area; to establish conceptually the long-term infrastructure requirements for the entire Fort Point Channel/Commonwealth Flats area; to determine any specific short-term effects the proposed Fan Pier and Pier 4 Developments might have on existing systems and to examine measures to mitigate adverse impacts.

The Final EIR Infrastructure analysis incorporates on-site information available for the Fan Pier and Pier 4 Developments based on on-going design efforts being carried out by the proponents as well as area-wide information gathered during infrastructure master planning effort requested by the Secretary of Environmental Affairs. This information is presented below in an effort to define the level of initial impact of the Fan Pier and Pier 4 Developments and the long-term development impacts on the infrastructure systems in the Fort Point Channel/Commonwealth Flats area.

DESCRIPTION OF THE ENVIRONMENT

■ Sanitary Systems

The sanitary sewer system serving the Fan Pier and Pier 4 Development sites is operated and maintained by the Boston Water and Sewer Commission (BWSC). This system is shown on Figure VI.2-1. There is a 15-inch sewer in Northern Avenue extending east from the Fan Pier to 50 feet west of Viaduct Street. BWSC has checked this sewer and reports it to be in generally good condition except for a low spot in a 200 to 300 foot section near Pier 4. From 50 feet west of Viaduct Street, the sewer discharges to a recently constructed 18-inch diameter pipe that extends to the Trilling Way/Northern Avenue intersection. At Trilling

FIGURE VI.2-1
Location Plan
Northern Avenue
Sanitary Sewer
System

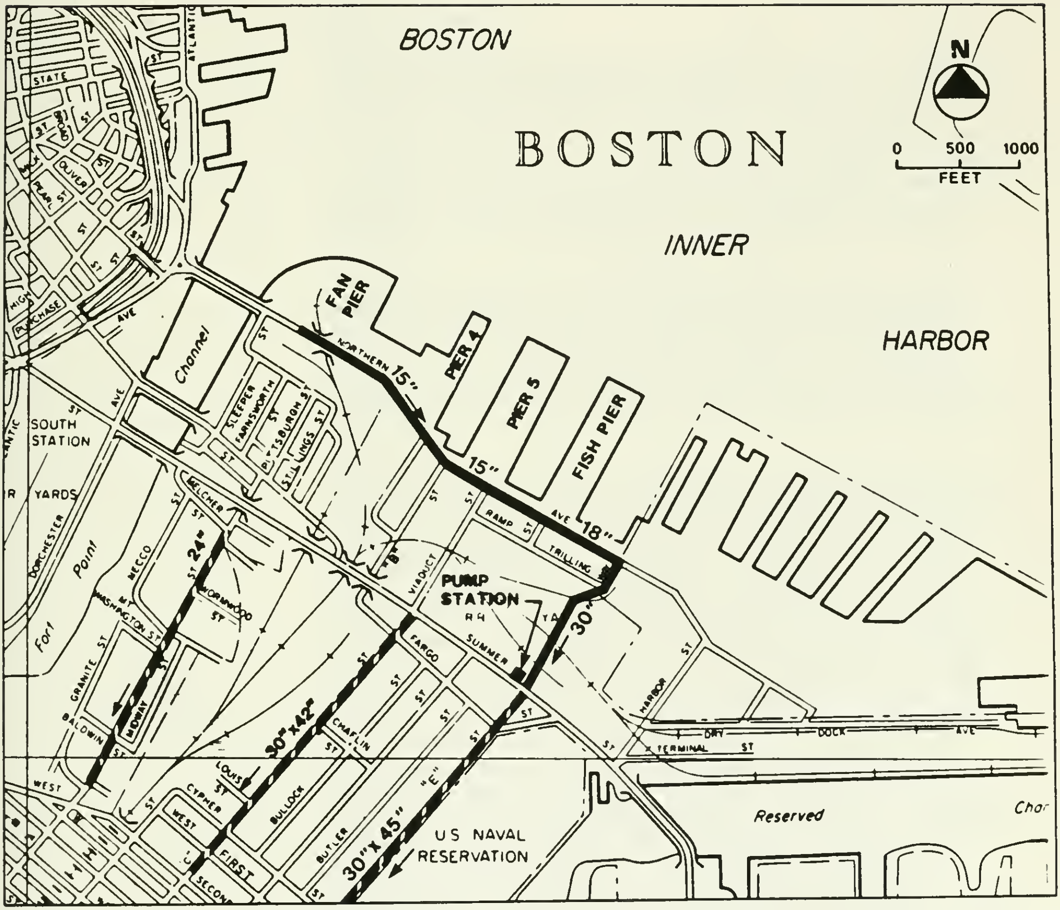
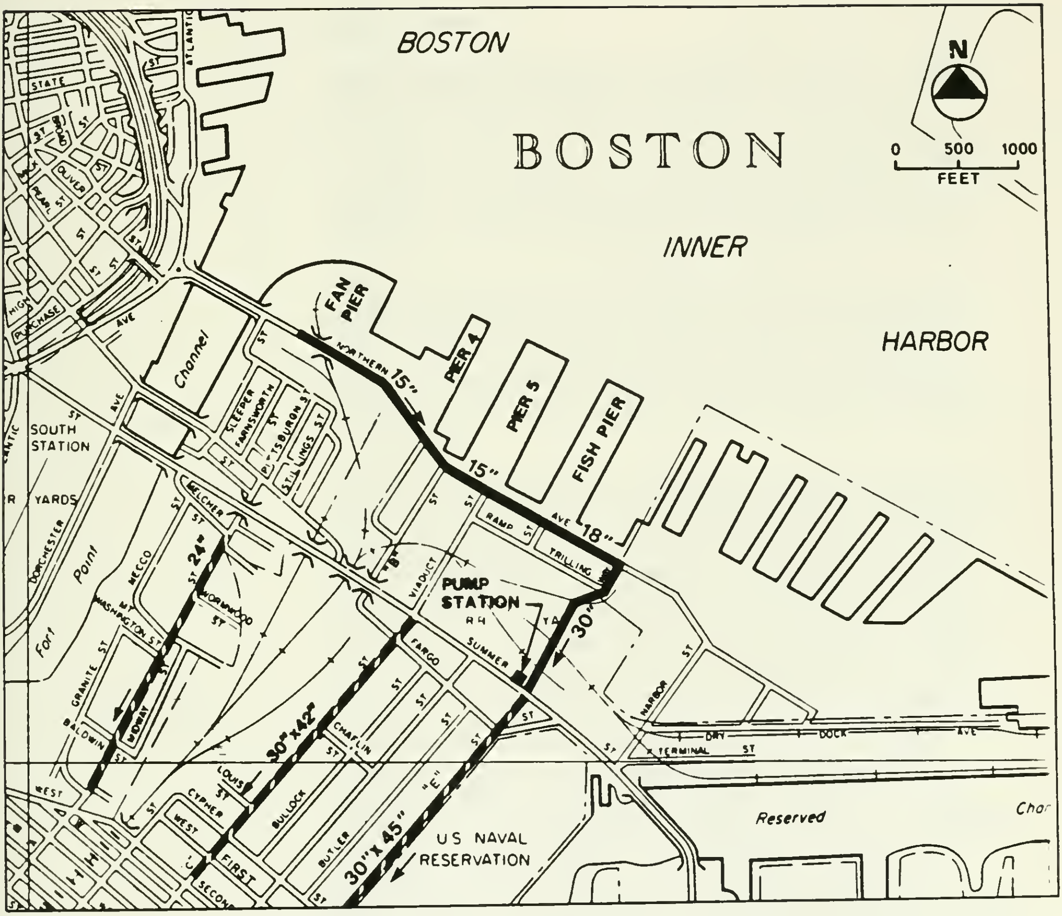


FIGURE VI.2-1
Location Plan
Northern Avenue
Sanitary Sewer
System



Way, sewage flows into a newly constructed 30-inch trunk line which proceeds southward, where it joins an 18-inch sewer at a pump station at Summer and "E" Streets. The pump station discharges to a 30-inch x 45-inch sewer in "E" Street which connects to the North Branch of the South Boston Interceptor in West First Street. This Interceptor, as shown on Figure VI.2-2, connects directly to the New Boston Main Interceptor which transports flow to the MDC Columbus Park Headworks. Sewage is pumped from the Headworks to the Deer Island Plant via the 138-inch diameter Boston Main Drainage Tunnel. At Deer Island, sewage receives primary treatment and chlorination before being discharged into the Boston Harbor.

System Issues

Combined Sewer Overflows. The discharges from combined sewer overflows into the Harbor are a source of pollution during heavy rain storms. However, dry weather discharges also occur at certain combined sewer outfalls. In general, dry weather discharges are caused by infiltration and inflow (I/I), insufficient system capacity, tidal waters entering the system and pumping failures at the Deer Island Treatment Plant.

There are neither combined sewers nor combined sewer outfalls/overflows in or near the immediate project areas. BWSC has indicated that sewage overflows do occur in the sewer system where there are combined sewers, namely down stream of the Summer Street Pump Station, including the North Branch of the South Boston Interceptor.

The February 1985 Final Draft Facility Study prepared by Metcalf & Eddy, Inc. for BWSC indicated that flow rates up to two and one-half times the average dry weather flow do not result in overflows along the North Branch of the South Boston Interceptor. When carrying three and one-half times the average dry weather flow, the Interceptor surcharges just upstream of the "A" Street siphon and an overflow occurs at the regulator located at "D" and First Streets. The BWSC has not recorded any overflow occurrences at this regulator for any dry weather event since March 1980. A profile of the interceptor at this flow rate of three and one-half times the average dry weather flow, as prepared by Metcalf & Eddy, is shown on Figure VI.2-3. In their Project Information Form submitted to (DEQE) in December 1982, O'Brien and Gere identified several wet weather overflow points along the North Branch. Figure VI.2-2 shows the locations of these overflows. Overflow occurrences will be reduced when the North Branch of the South Boston Interceptor is cleaned (the Metcalf & Eddy study reported deposition in the sewer ranging from 5

FIGURE VI.2-2
Location Plan
South Boston
Interceptor
with Overflow
Points

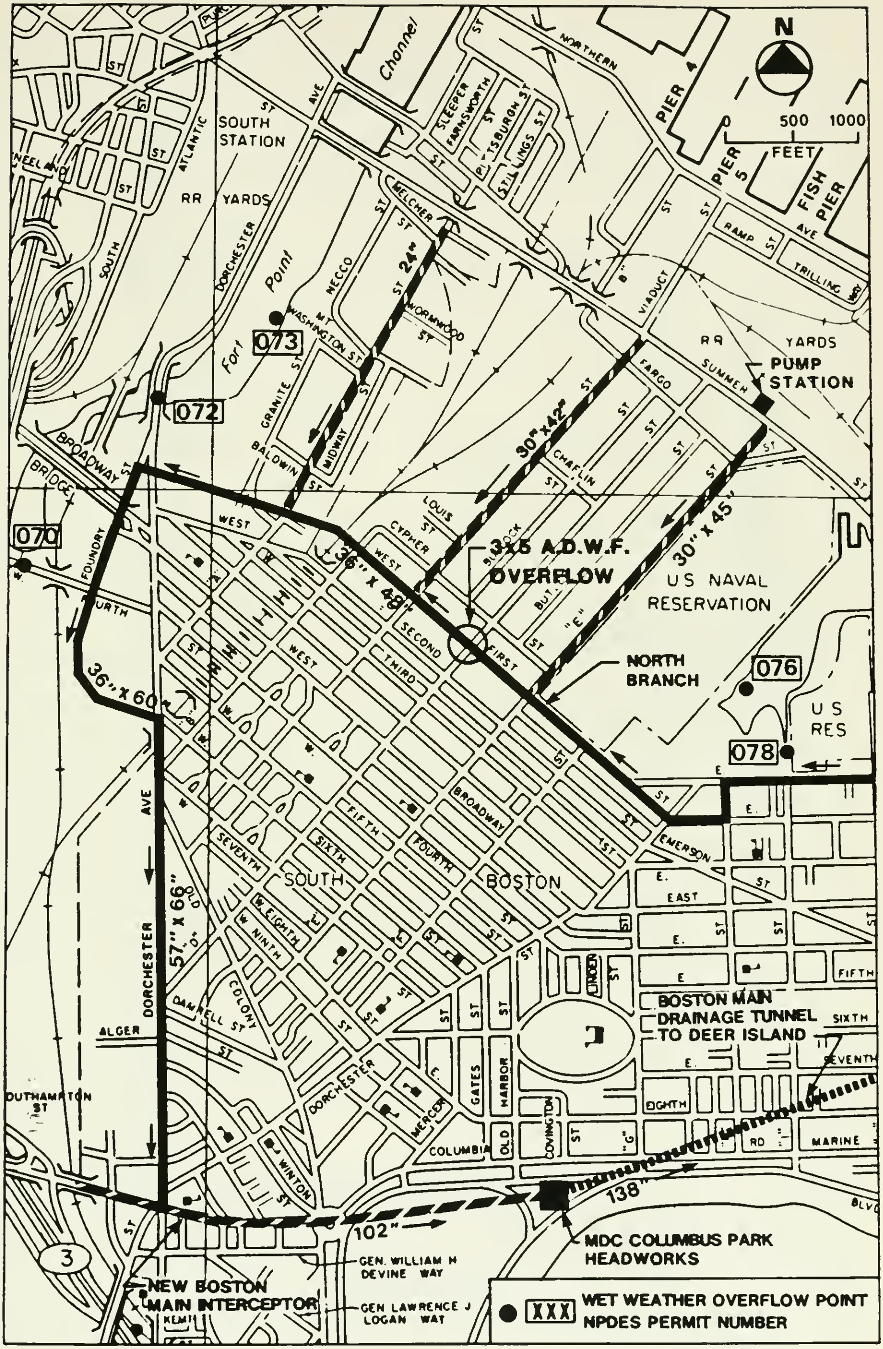
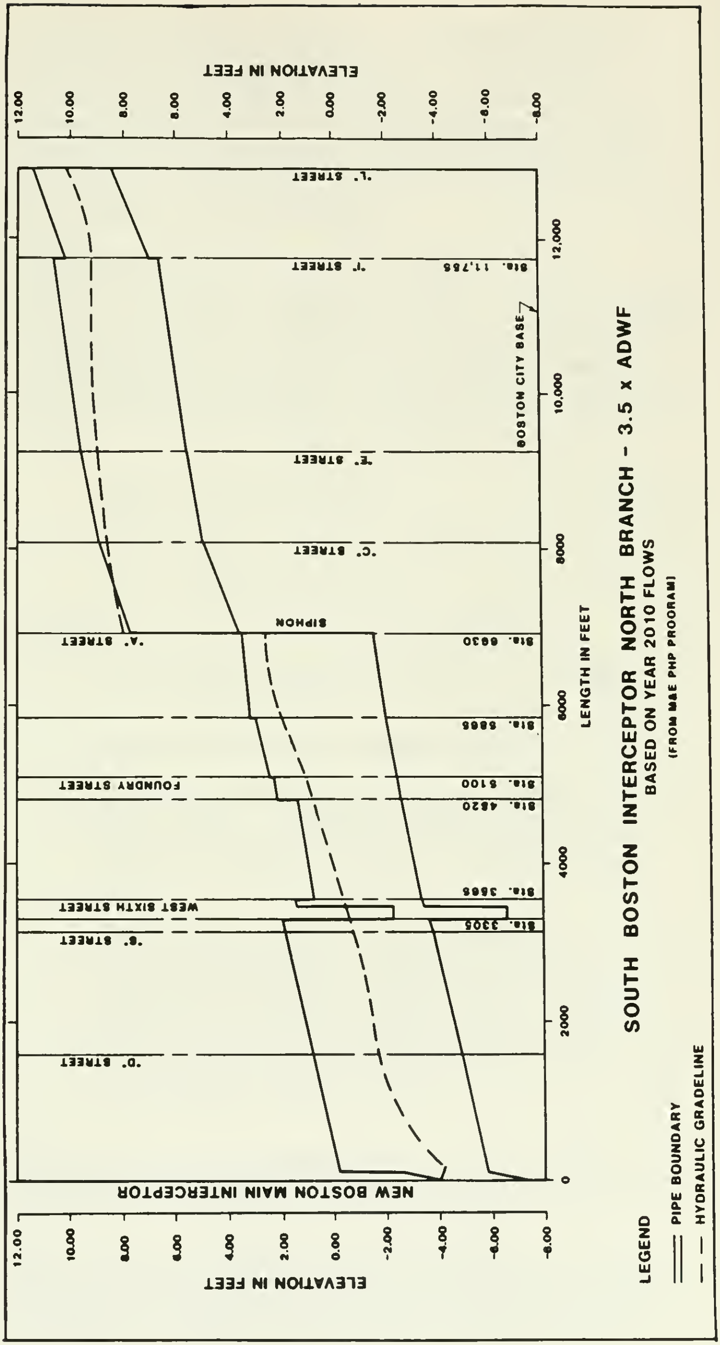


FIGURE VI.2-3
South Boston
Interceptor
North Branch
3.5 x Average
Dry Weather
Flow



inches to 35 inches in depth). BWSC is planning to begin cleaning the North Branch of the South Boston Interceptor beginning in the spring of 1987. The cleaning of the South Branch of this Interceptor is presently being done. BWSC has established an ongoing inspection and maintenance program for the overflow structures in the Harbor to reduce the inflow of tidal flows and thus reduce the amount of dry weather overflows to the harbor waters.

Boston Harbor Clean-Up. The Massachusetts Water Resources Authority (MWRA) was created in 1984 to assume the water and sewer responsibilities of the Metropolitan District Commission and to address the clean-up of Boston Harbor. The harbor clean-up effort is currently undergoing a comprehensive review and assessment by the MWRA in order to establish a priority of corrective actions. Actions currently being taken include:

- A major maintenance program at the existing Deer Island Treatment Facility.
- Facility operations and management studies to improve systems operations.

Actions currently being evaluated include:

- Construction of secondary wastewater treatment plant at Deer Island.
- Elimination of sludge disposal in Boston Harbor.
- Correction of combined sewage overflows (CSO) into Boston Harbor. The MWRA and BWSC have CSO correction programs whose first priority is the clean-up of beaches and other recreational use areas.
- Implementation of the on-going industrial pretreatment program. The installation of pretreatment facilities and changes in industrial processing will reduce heavy metal and toxic chemical discharges into Boston Harbor from treatment plant effluent and sludge disposal, and from combined sewage overflows.

■ Storm Drainage System

The Fan Pier site currently does not have a storm drainage system. All drainage is by overland flow to Boston Harbor and the Fort Point Channel.

The Pier 4 site has several storm drainage systems. Pier 4 between Northern Avenue and the Pier 4 Restaurant is served by a series of catch basins and drains which discharge directly to Boston Harbor either under the

existing pier structure or through the easterly stone sea wall. The remainder of the site from Pier 4 westerly to approximately the angle point in the Northern Avenue northerly street line (project division line) is drained by a catch basin system with storm drain pipe varying in size from 8 inches to 30 inches. The 30 inch outfall to Boston Harbor is located approximately 300 feet northerly of the angle point in the Northern Avenue northerly street line, and is within the Pier 4 site.

- **Water Supply Systems**

Water for domestic use and fire protection is supplied to the project area by the BWSC. Three major water lines serve the Fan Pier and Pier 4 Development sites--two low service mains for domestic water supply and a high service main for fire protection. All three systems are located in Northern Avenue (See Figure VI.2-4).

The low service distribution line that supplies domestic water to the project area is a 12-inch main in Northern Avenue. The distribution line is supplied by a 30-inch low service transmission main also located in Northern Avenue. The 12-inch low service distribution line increases to a 16-inch low service distribution main near Pier 5, and provides the domestic and fire water supply to existing commercial and light industrial properties all along Northern Avenue from the Fort Point Channel to the Boston Marine Industrial Park. The distribution main also reduces to 8 inches in Sleeper Street to a point approximately 350 feet south of Northern Avenue where it increases to 12 inches toward Congress Street. The low service water main system which serves this area of South Boston is shown on Figure VI.2-5.

The low service system which provides domestic supply consists of a 12-inch cast iron pipe installed around 1909 and a 30-inch cast iron pipe transmission main also installed around 1909, but cleaned and cement lined in 1971. These two mains are cross-connected at various points in the system with two cross-connections in the vicinity of the Fan Pier and Pier 4 sites. The 30-inch transmission main should be in good condition as it was cleaned and cement lined in 1971. On the other hand, the 12-inch main and the cross-connections to the 30-inch transmission main could be in deteriorated condition from possible tuberculation over the 75 to 80 years they have been in service.

BWSC water system maps indicate the existence of a series of 6-inch water mains running along the perimeters of the Fan Pier and Pier 4. These lines are connected to the low service water system along Northern

FIGURE VI.2-4
Location Plan
Northern Avenue
Water Supply
System

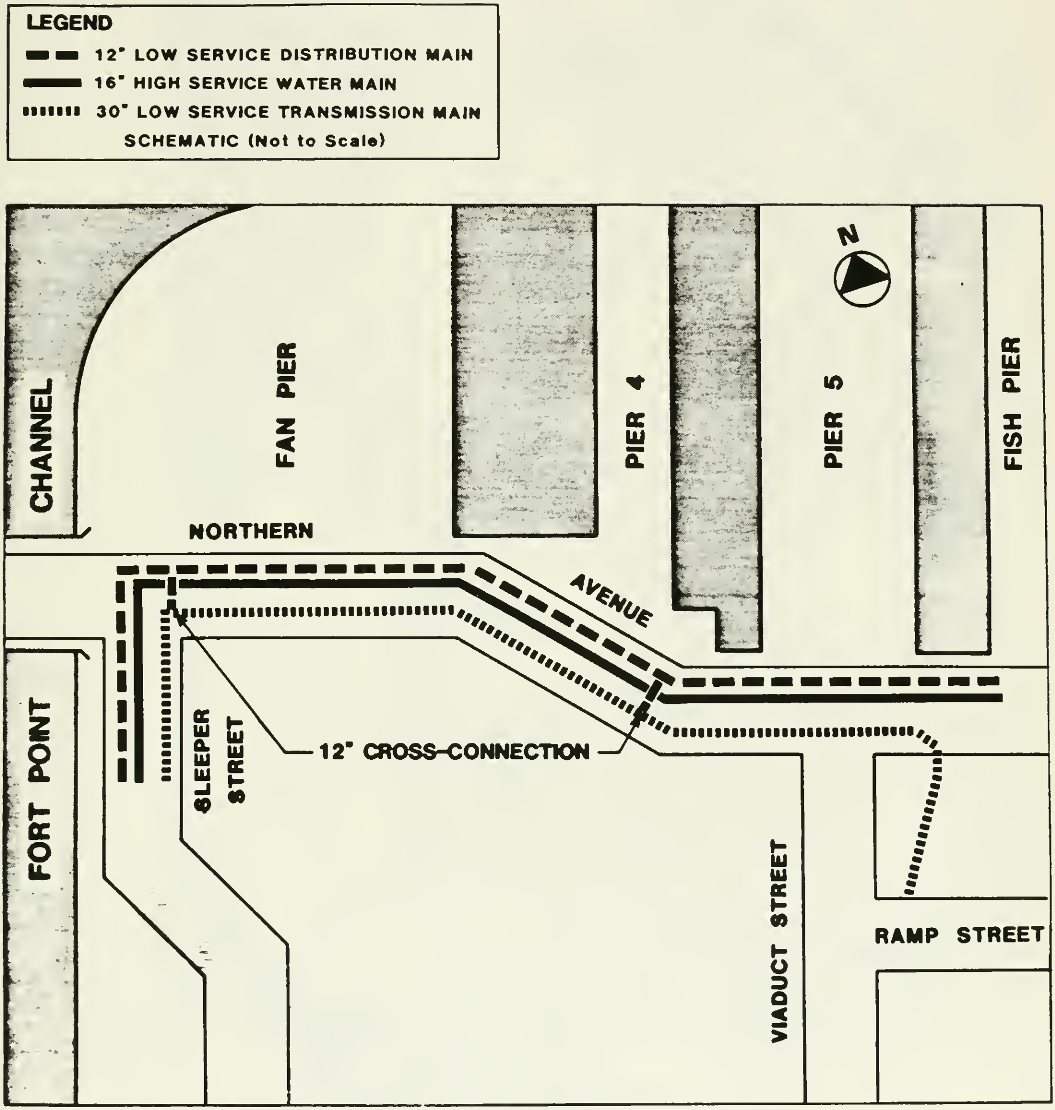
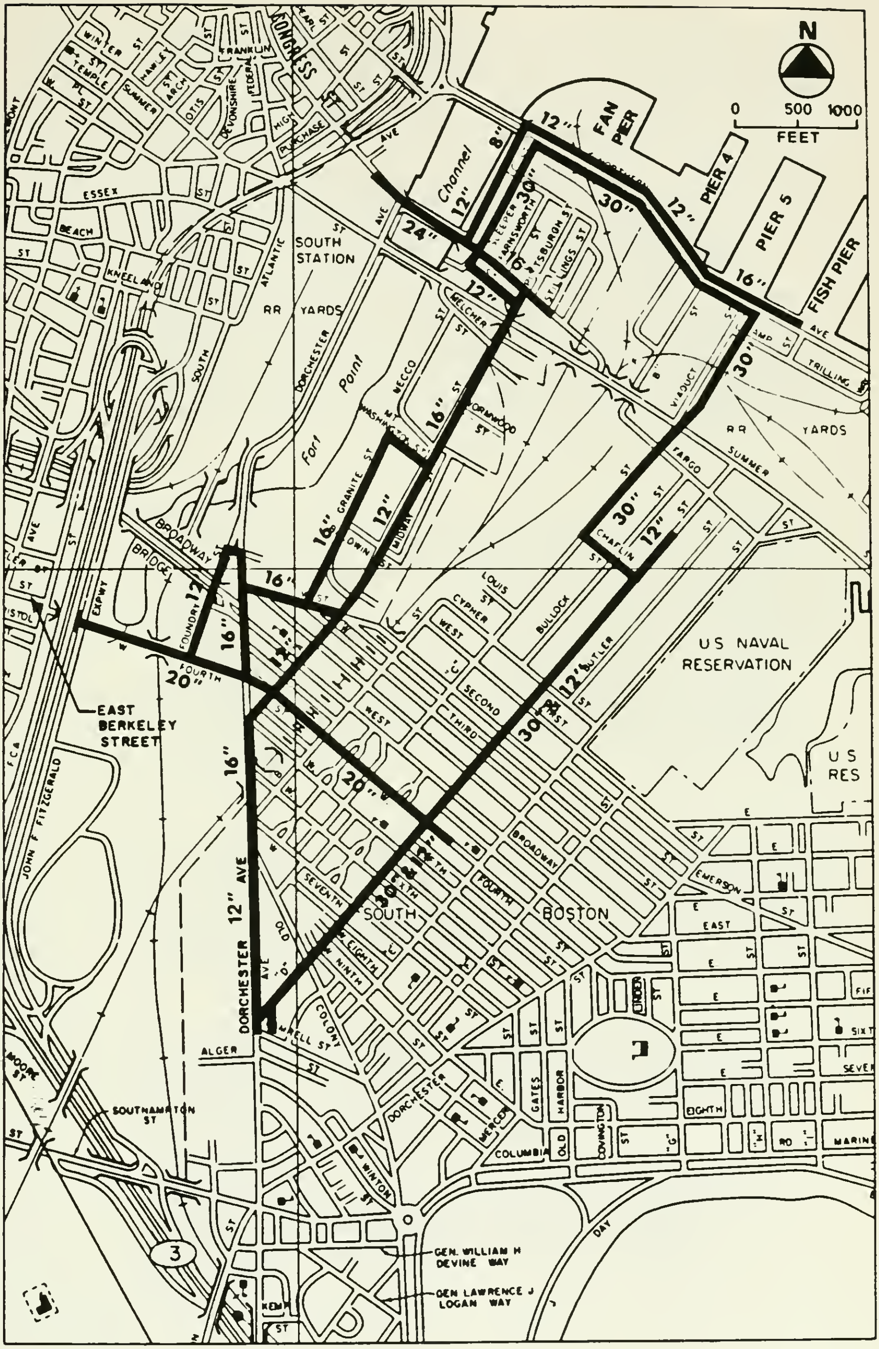


FIGURE VI.2-5
Location Plan
Low Service
Water Supply
System



Avenue. The system maps indicate the 6-inch pipes serving the Fan Pier and the area across from the Fan Pier (old railroad yard) have been cut off from service by a closed valve in the water main near Pier 4. The age or condition of these 6-inch pipes is not known.

The high service water supply system has a 16-inch main running parallel to the 12-inch and 30-inch low service mains in Northern Avenue. The high service main supplies fire hydrants along Viaduct Street, fire protection to properties along Northern Avenue and domestic water to the Boston Fish Pier. The 16-inch high service main in the area was installed around 1931. In 1983, BWSC replaced an 8-inch high service main in a portion of Sleeper Street with 16-inch pipe to make the development area completely looped with a 16-inch main. The high service water main system which services this area of South Boston is shown on Figure VI.2-6.

- **Electricity**

The Boston Edison Company presently has two electric supply systems in Northern Avenue adjacent to the Fan Pier and Pier 4. A duct/manhole system in the northerly half of the roadway was installed many years ago to furnish electrical power for the warehousing facilities of the New York, New Haven and Hartford Railroad located on both sides of Northern Avenue, and also to furnish electricity for the street lighting system. A 115 KV transmission system in the center of the roadway was installed in the mid-1970's to carry power from BECO's 'L' street generating plant to their substation on Atlantic Avenue.

- **Gas System**

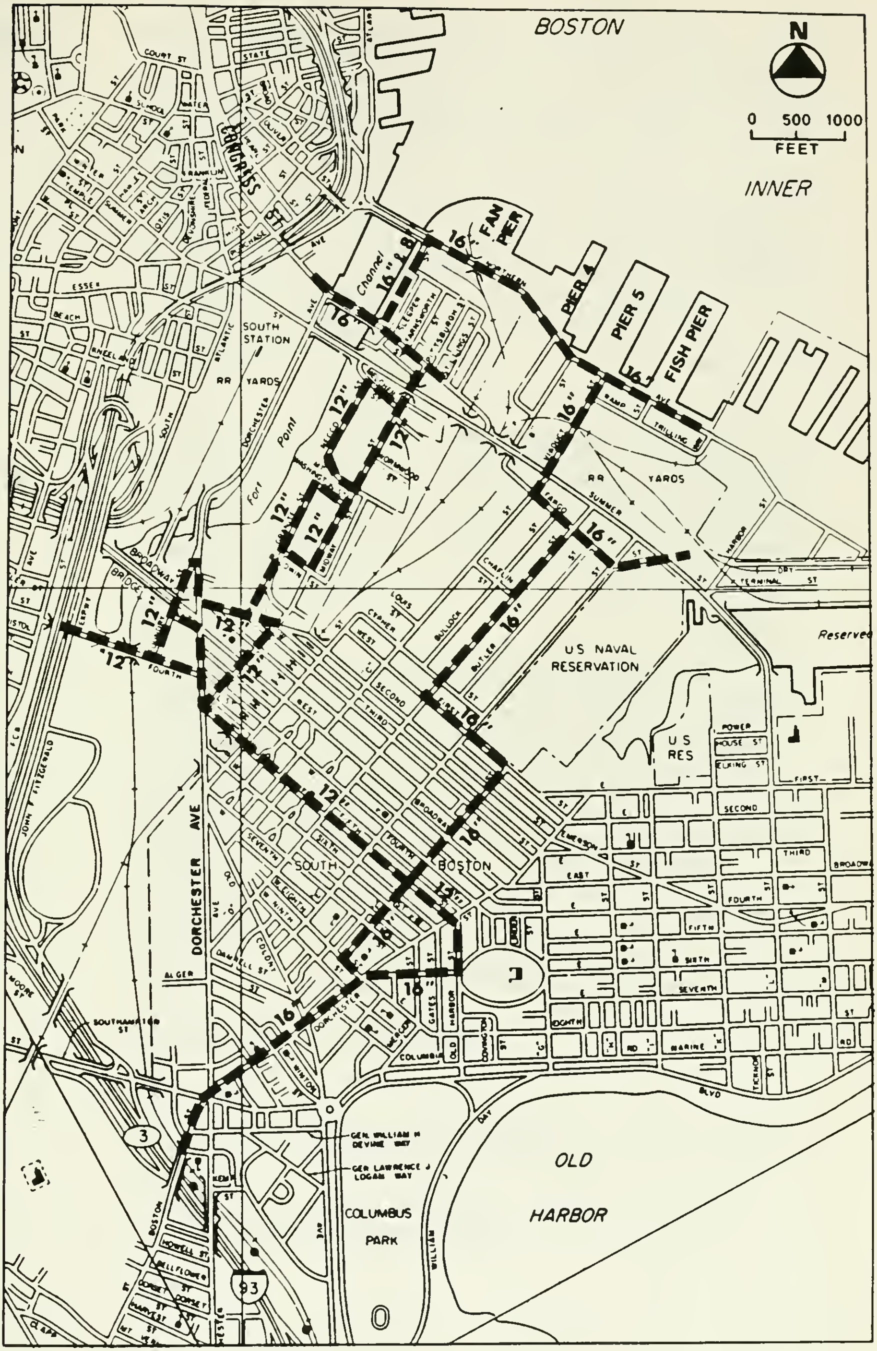
There is an existing Boston Gas Company 12-inch intermediate pressure gas main in the northerly half of the Northern Avenue roadway adjacent to the development sites, which was installed in 1924. Anthony's Pier 4 Restaurant is the only major user along Northern Avenue between "B" Street and Sleeper Street.

- **Telecommunications System**

The New England Telephone Company does not have an underground duct/manhole system in Northern Avenue adjacent to the development sites; all service west of "B" Street to the Sleeper Street area is furnished by overhead wires on utility poles.

The Boston Fire Alarm Division of the Boston Fire Department has existing facilities in Northern Avenue adjacent to the development sites. The Pier 4 Restaurant presently has a fire alarm system in operation.

FIGURE VI.2-6
Location Plan
High Service
Water Supply
System



FORT POINT CHANNEL/ COMMONWEALTH FLATS AREA LONG-TERM INFRASTRUCTURE MASTER PLAN

At the request of the Secretary of Environmental Affairs, the proponents have undertaken an investigation of the long-term area-wide infrastructure requirements for the Fort Point Channel/Commonwealth Flats area. For the purposes of this effort the specific study area was defined as that area of South Boston bounded on the North by Boston Harbor on the east by E.D.I.C., on the south by Summer Street and on the west by the Fort Point Channel. This planning effort has involved extensive consultation with public agencies and utility providers as well as with public and private development entities in the area. The result of this infrastructure planning process is presented in the following pages and represents a general consensus of the numerous concerned public and private entities.

To allow the development of utility distribution networks for the Fort Point Channel/Commonwealth Flats area of South Boston several basic planning assumptions have been made. Perhaps the two most important assumptions (1) the future configuration of roadways, since roadways help define development sites and provide rights-of-way for utilities; and (2) the total level of development that the infrastrucutre systems will have to serve in their design life.

The roadway network shown on Figure VI.2-7 was developed in consultation with the Executive Office of Transportation and Construction, Massport, the Boston Redevelopment Authority and other of the public and private agencies involved in planning and development in the area. Clearly this network is not intended to represent a final system design to be built: there are points of disagreement among and within all the parties involved as to the detailed alignments and design of the roadway system. Nevertheless, this roadway plan presents a reasonably complete and accurate summary of the concepts being developed by the various parties.

The new and/or reconstructed roadways shown on Figure VI.2-7 are to be constructed by the following agencies:

Commonwealth of Massachusetts

- Seaport Access Road/I-90
- Seaport Access Road (Entrance) - Congress Streeet to Relocated Northern Avenue
- Seaport Access Road (Exit) - Congress Street to Relocated Northern Avenue

- Relocated Northern Avenue - "B" Street to Atlantic Avenue
- Sleeper Street - Relocated Northern Avenue to Existing Northern Avenue

City of Boston

- Sleeper Street - Congress Street to Relocated Northern Avenue
- Farnsworth Street - Congress Street to Relocated Northern Avenue
- Pittsburgh Street - Congress Street to Existing Northern Avenue
- Seaport Access Road (Entrance) - Relocated Northern Avenue to Existing Northern Avenue
- B Street - Congress Street to Relocated Northern Avenue
- Congress Street - Stillings Street to "B" Street

Fan Pier and Pier 4 Developments

- All on site roadways north of Existing Northern Avenue

Commonwealth Flats/World Trade Center Developments

- D Street Extension
- Viaduct Street - Adjacent
- Ramp Street - Adjacent
- Congress Street Extension
- Trilling Way

A second basic assumption that has guided the area-wide infrastructure planning is that the systems required to service this area should be adequate to meet the requirements of complete development on all of the available parcels formed by the street network shown. Thus, the systems illustrated in the following pages are located and sized to service the long-term development needs of the study area for the next 25 to 50 years, depending on the rate of build out. This analysis looks well beyond the completion year (1995) and the design requirements of the Fan Pier and Pier 4 projects. The infrastructure systems have also been planned, as requested by the Secretary of Environmental Affairs, to enhance existing service to adjacent areas of the City.

- **Sanitary Sewer System**

There are three major collection trunk lines that service the Commonwealth Flats/Fort Point Channel sections of Boston: the 24-inch diameter line in "A" Street, a 30"x42" brick sewer in "C" Street and a 30"x45" brick sewer in "E" Street. All three of these lines presently function as combined sewers. This means that they carry wet weather storm drainage flows as well as dry weather sanitary sewage flows. The sanitary sewer collection system proposed in Figure VI.2-8 will be a separate dry weather, sanitary sewage collection system only within the limits of the study area. This sewer collection system would continue to discharge into a combined system south of Summer Street but will be constructed in a manner that will allow incorporation into a separate system in this area in the future.

There are three sewer system branches proposed to service this area. One would carry flows to the existing sewer line in "A" Street and the other two would discharge to the existing line in "E" Street by way of the Summer Street pump station.

It is BWSC's policy not to fund improvements or extensions to their systems required to meet the demands of specific new developments. Rather, it is BWSC's policy that any such costs associated with this type of work be borne by the entity requiring the work to be done. BWSC also requires that all work be done to its standards and that they retain approval over the design and construction of all work. BWSC will maintain and operate the system after it is in place.

The following scenario is proposed for implementation of the systems shown on Figure VI.2-8. The existing combined sewer servicing the Sleeper Street, Farnsworth Street, Pittsburgh Street, Stilling Street and Congress Street area will be retained and will become a separate sanitary system upon the completion of the reconstruction of these roadways, assuming a new storm drain system will be installed during that reconstruction. The extension of this system to service the needs of the adjacent development areas will be accomplished by the developers of these parcels. This system must be constructed during the construction/re-construction of roadways in the area, and it is assumed that the affected developers will be required to make early commitments of funds in order to assure that the required service is available when their developments are completed.

The construction of the system proposed to service the Fan Pier and Pier 4 Developments will be undertaken by the proponents and possibly other development entities to assure availability of service upon completion of the sites. This system will be built in coordination with

the construction of adjacent developments and the new area roadway system.

The system proposed to service the Commonwealth Flats/World Trade Center area incorporates the use of the existing sewer recently completed and the new system required to meet the needs of Fan Pier and Pier 4. This system will be constructed in coordination with the new roadways proposed for the area.

Several alternative configurations for the systems shown on Figure VI.2-8 are under study to assure that variations in final roadway configurations and construction scheduling will not affect the ability of the systems to service the proposed projects and adjacent areas of South Boston. These efforts will continue, in close coordination with BWSC, other city and state agencies and other area developers to design and construct systems which will meet the needs of the area.

- Storm Drainage System

The storm drainage system shown on Figure VI.2-9 has been developed to be constructed in conjunction with the reconstruction of the area roadway network. It is strongly recommended that the roadway drainage systems be adequately sized to accommodate not only the runoff from the streets but also from the adjacent development parcels. Given the location of the Fan Pier and Pier 4 Developments all site drainage will flow to the Inner Harbor independent of the systems built for roadway drainage. Most of the other parcels in the area must depend on the creation of new drain systems in the roadways that will be adequate to meet the present and future needs of the area.

The city and state agencies responsible for the design guidelines for these roadways are encouraged to assure that these systems are adequate. Much of the storm drainage, in the area where systems exist, is presently collected in combined sewers and contributes to overloading of the existing sewage treatment facilities and adding to the pollution of Boston Harbor.

As in the case of the sanitary sewer, several alternative system configurations are being studied based on various roadway and/or scheduling modifications that may occur before implementation of the systems. The size of the new systems recently constructed in the Commonwealth Flats/World Trade Center area allow this flexibility, as does the existing line in Congress Street. The system shown on Figure VI.2-9 assumes the construction of Relocated Northern Avenue before the adjacent city street improvements and the adequate sizing of its drainage system to accommodate not only

Northern Avenue drainage and the adjacent parcel drainage, but also the runoff from the adjacent street drainage systems as well. This minimizes the length of pipe required in the streets as well as the number of outfalls that will be needed, and simplifies any treatment facilities that may be proposed at the outfalls to the Harbor.

The proponents of the Fan Pier and Pier 4 Projects will continue to work with city and state agencies and area developers to assure that planning for the storm drainage systems meets the long-term requirements of the area.

- **Low Service Water System**

The existing low service water transmission system in the study area has adequate capacity to meet the long-term development service requirements. The system modifications as shown on Figure VI.2-10 are required to extend service lines into new areas of development and to clear future development parcels. The BWSC is presently investigating the feasibility of relocating its Congress Street transmission line from Downtown to the proposed Northern Avenue bridge. This would improve service by increasing the size of the transmission line and by placing it on a more reliable and more easily maintained facility. The modifications to the system will be made during the proposed roadway construction/reconstruction planned for the area. A street hydrant system will be required and will be supplied by the low service water system. The design and implementation of this system will be coordinated with the Boston Fire Department by the agencies and/or developers of each segment of the overall system as alignments and limits of respon-sibility become more completely defined. As in the case of the High Service Water system modifications, the adjacent landowners will be expected to contribute to the effort required to service their parcels.

- **High Service Water System**

The study area is serviced by two types of water supply systems: (1) High Service Water which is used for internal building fire protection systems, and (2) Low Service Water which is used for domestic water. Both systems are maintained and operated by BWSC.

The High Service Water supply system servicing this area is shown on Figure VI.2-6, with water able to enter the area from lines in Congress Street, "A" Street, Viaduct Street and Northern Avenue. This existing distribution system must be extended as shown on Figure VI.2-11 to provide for the long-term development of the area. The installation of the system shown will be coordinated with the roadway construction proposed for the area. In

addition to extending the system into the proposed areas of development, the existing lines in Sleeper, Farnsworth and Pittsburgh Streets will be upgraded to assure adequate service in the area. This work, as in the case of the sanitary sewage system, must be funded by the adjacent developers except in areas where relocation of existing lines are required to do roadway construction.

BWSC is investigating the feasibility of extending a new supply line into the area over the proposed Northern Avenue bridge. This line would either replace or supplement the existing line crossing Fort Point Channel at Congress Street.

■ Electric System

The Fort Point Channel/Commonwealth Flats section of South Boston, is presently serviced by Boston Edison Company (BECO) by way of underground conduit and manhole systems. These systems are fed from two directions: from a substation on Atlantic Avenue by way of the Congress Street Bridge and from a substation at the BECO "L" Street generating facility by way of Summer Street. The existing systems must be upgraded to meet the requirements of the future level of development anticipated in the area.

The conceptual distribution system shown on Figure VI.2-12 indicates the scope of the BECO system necessary to meet the projected energy requirements upon long-term development of the area. This system requires the construction of a substation within the region to enable BECO to supply power through a 'network' system similar to the systems now used in the Downtown area. The location shown for the substation is for conceptual purposes only, to identify that a substation is required and to allow the development of a suitable distribution network. The final location of the station will depend on the availability of a land parcel appropriate for this use. BECO personnel are presently investigating several possible sites in the Summer Street corridor for this purpose.

The time frame required for the development and implementation of a distribution network of this size and complexity requires that a temporary system be developed to service the initial requirements of Fan Pier and Pier 4. It is anticipated that this temporary system will be built to conform to the final needs of the overall system, but that it will be fed from BECO's existing substation on Atlantic Avenue. This portion of the system will later be switched over to the new substation when it comes on line.

The developers of Fan Pier and Pier 4 will continue to work with BECO, public agencies and other area developers for implementation of both the temporary and final service systems.

The final electric distribution system being planned by BECO will have adequate capacity for extension into the adjacent areas of South Boston to supplement the existing system. This system will also relieve some of the load now placed on existing systems and should improve service delivery to adjacent areas of Boston.

- **Gas System**

Boston Gas Company presently services this area of South Boston by way of two separate systems: a low pressure gas system and an intermediate pressure gas system. The low pressure system is theoretically used to meet smaller, lower volume gas loads and the intermediate pressure system is intended to supply higher volume requirements. The conceptual distribution system shown on Figure VI.2-13 extends the intermediate gas system to supply the needs of both existing and future development in the area and releases the capacity of the low pressure line now taken up by users in this area to supplement existing service in adjacent areas of the city.

Boston Gas Company recently upgraded a portion of its system in front of the World Trade Center in anticipation of the construction of the required distribution network.

The Fan Pier and Pier 4 developers will continue to work with Boston Gas Company to coordinate the extension of the gas system to service their developments and to assure that portions of the system built to service their projects allow for the implementation of the long-term distribution system.

- **Telecommunications System**

New England Telephone (NET), in response to the existing levels of development and in anticipation of the future development of the area, is upgrading its existing facilities. This effort includes the construction of a switching substation in its existing facility on Congress Street and the construction of conduit and manhole facilities in the local roadways. These systems are adequate, if extended with the construction of the remainder of the local street network, to meet the long-term development requirements (see Figure VI.2-14). This distribution system is planned to be utilized for emergency communication systems by both the Boston Fire Department and the Boston Police Department.

The developers will continue to work with NET to assure that the portion of the system required to meet the

service needs of the Fan Pier and Pier 4 Developments will be sized and detailed to be incorporated into the final distribution network for the area. The network planned and now being built has the capacity to be extended into adjacent areas of the city and will allow the upgrading of existing telecommunications service.

- **Summary**

The viability and desirability of the conceptual utility systems shown on these plans has been generally agreed upon by the utility suppliers and by the major future users in the Fort Point Channel/Commonwealth Flats area. Due to the number of public agencies, utilities and private interests involved with design and/or construction of portions of the area there is a great deal of planning and coordination of work still to be done to assure acceptable design and construction of the system is achieved. Funding for the work required will also be coming from many public and private sources. The utility companies will be performing the work on their own systems necessary to meet the future load requirements but will need assignments of new rights-of-way in existing and proposed streets. The utilities will be expecting various levels of contri-butions to the cost of their systems in a fashion similar to their Downtown policies. The construction of water and sewer systems will be done by private developers as well as by public agencies and must be coordinated to occur as part of the proposed roadway construction. All of the interested parties must continue to be actively involved in this coordination effort to assure that their interests and the interests of the area are addressed adequately at each stage of implementation.

FIGURE VI.2-7
Fort Point Channel/
Commonwealth Flats
Long-Term Development
Roadway Network

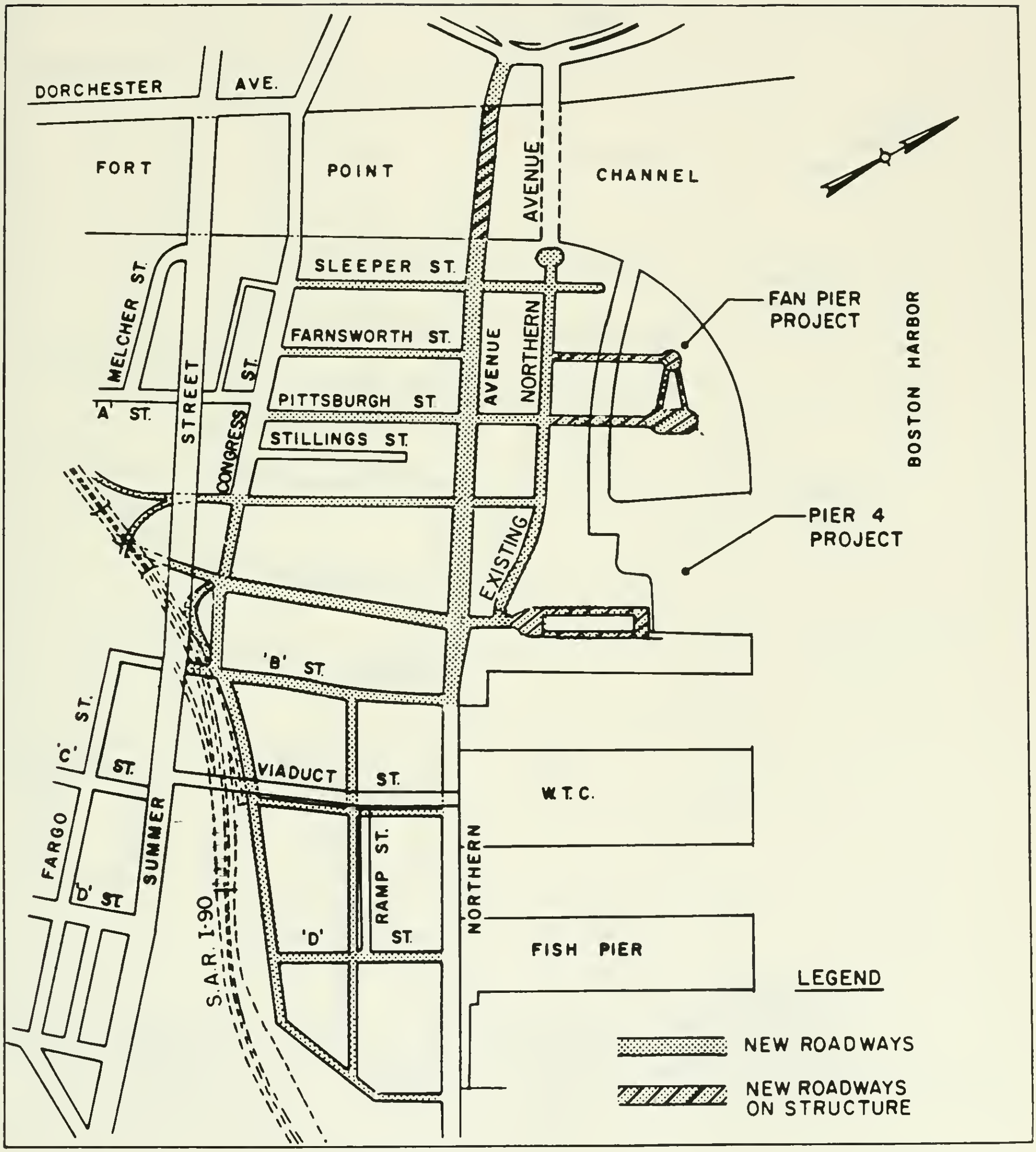


FIGURE VI.2-8
Fort Point Channel/
Commonwealth Flats
Long-Term Development
Sanitary Sewer System

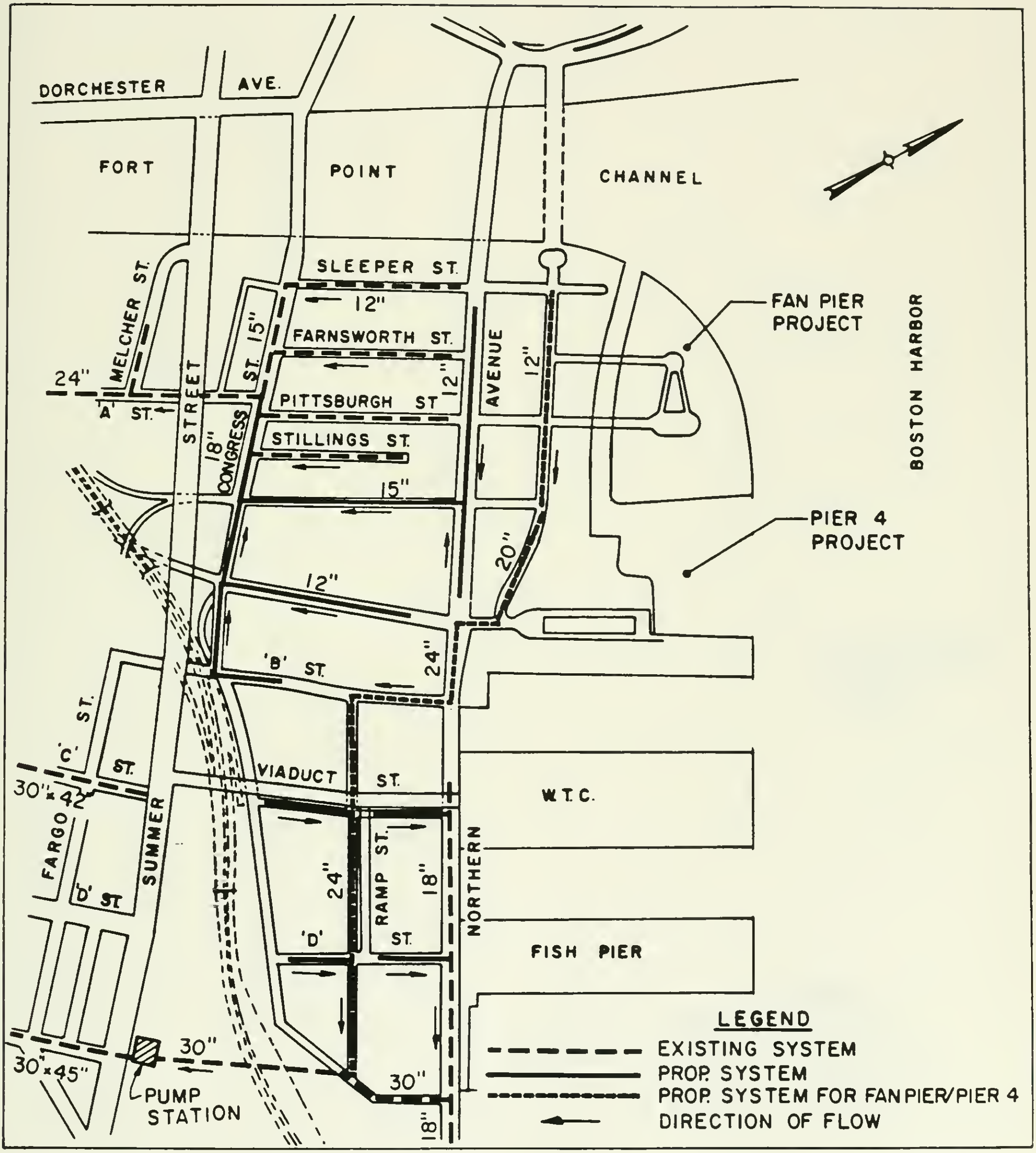


FIGURE VI.2-9
Fort Point Channel/
Commonwealth Flats
Long-Term Development
Storm Drain System

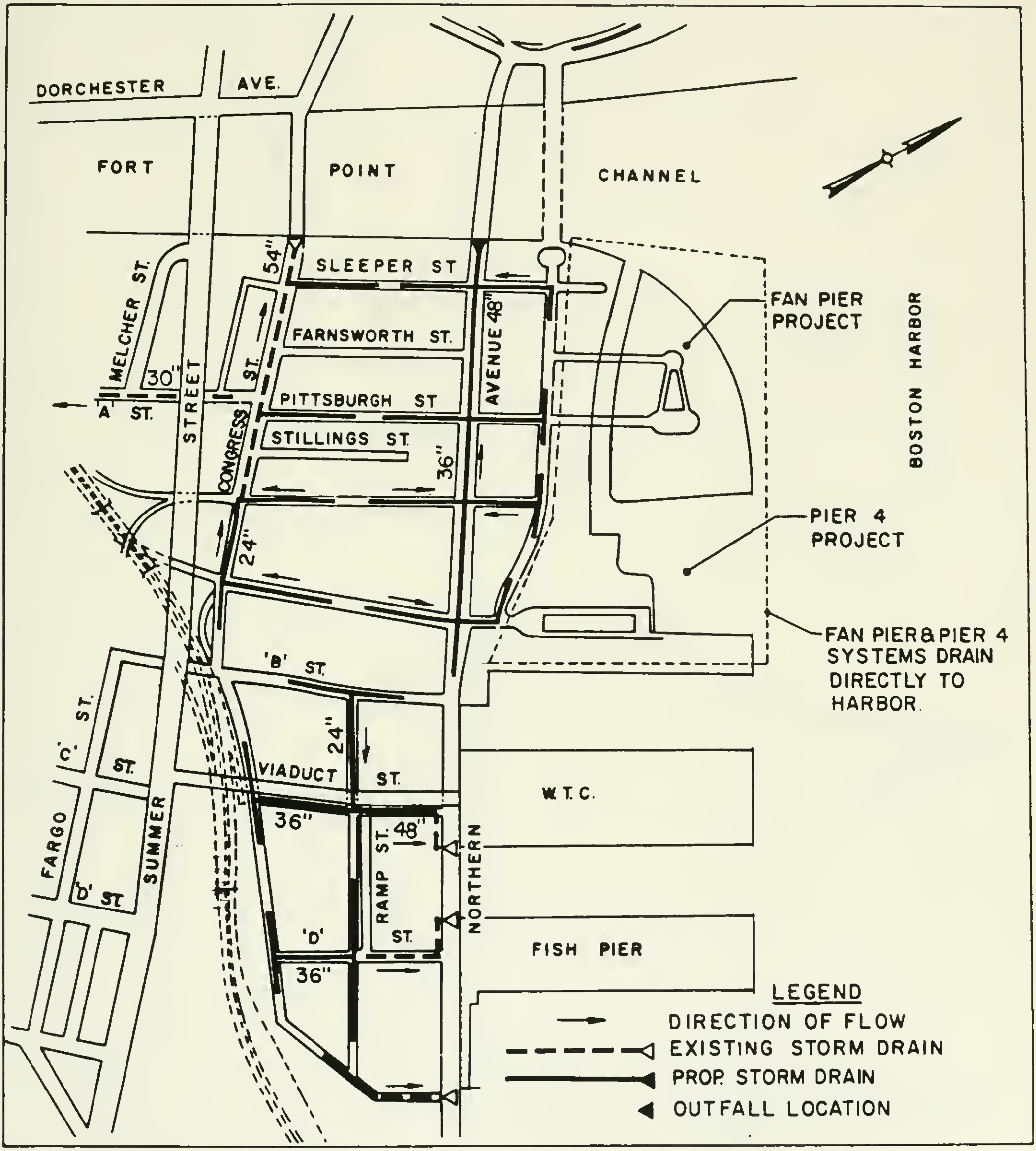


FIGURE VI.2-10
Fort Point Channel/
Commonwealth Flats
Long-Term Development
Low Service Water
System

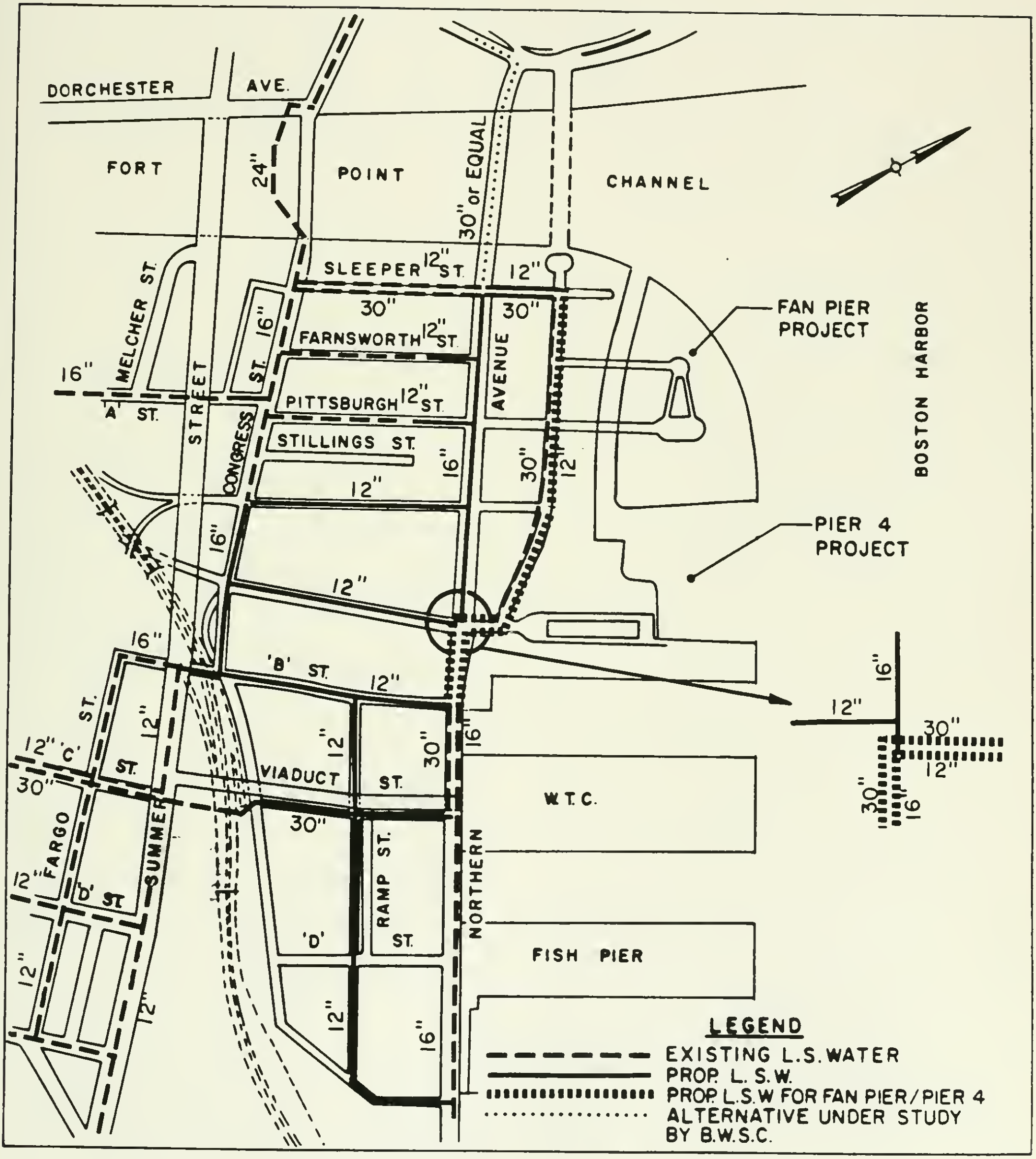


FIGURE VI.2-11
Fort Point Channel/
Commonwealth Flats
Long-Term Development
High Service Water
System

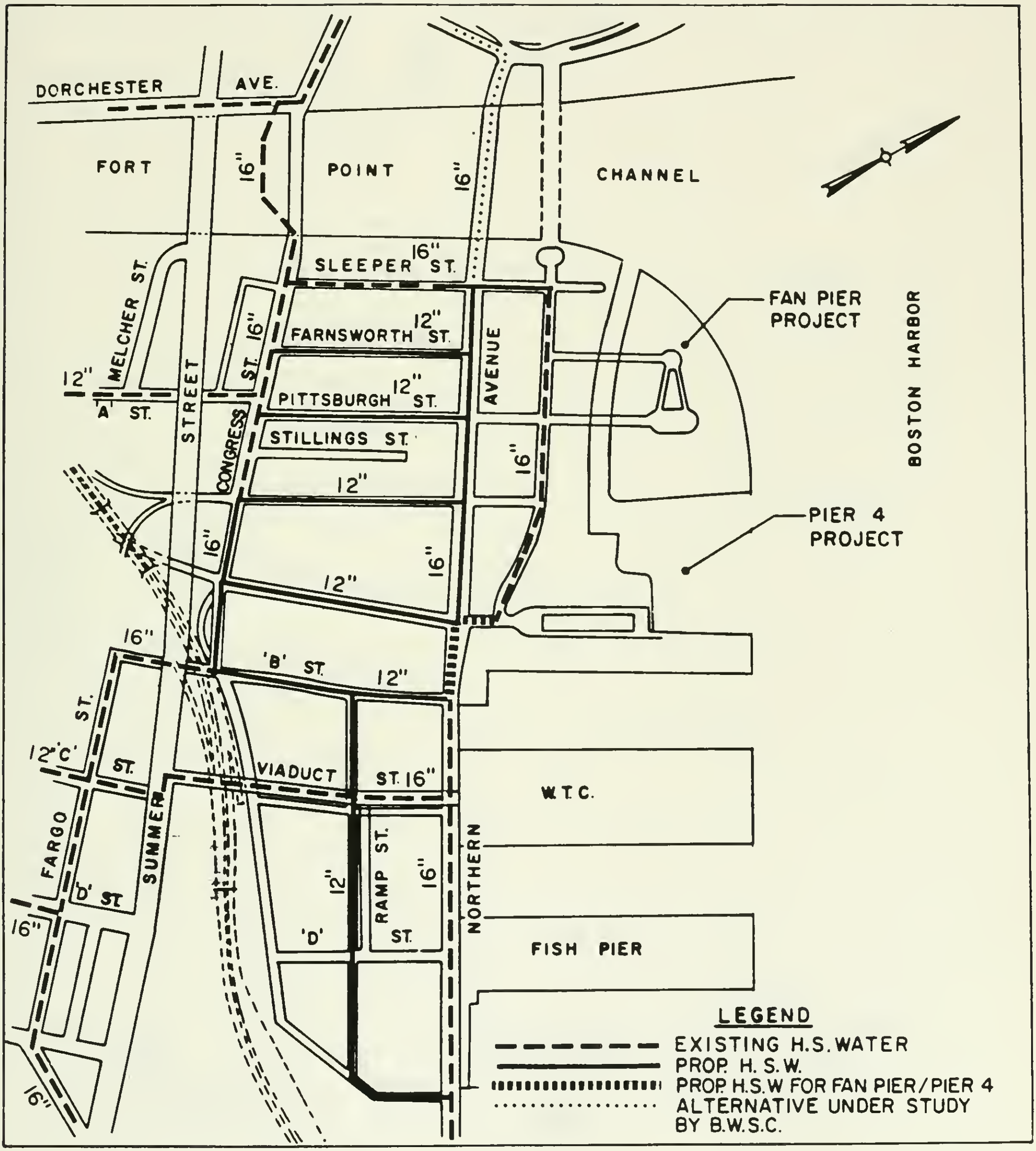


FIGURE VI.2-12
Fort Point Channel/
Commonwealth Flats
Long-Term Development
Electric System

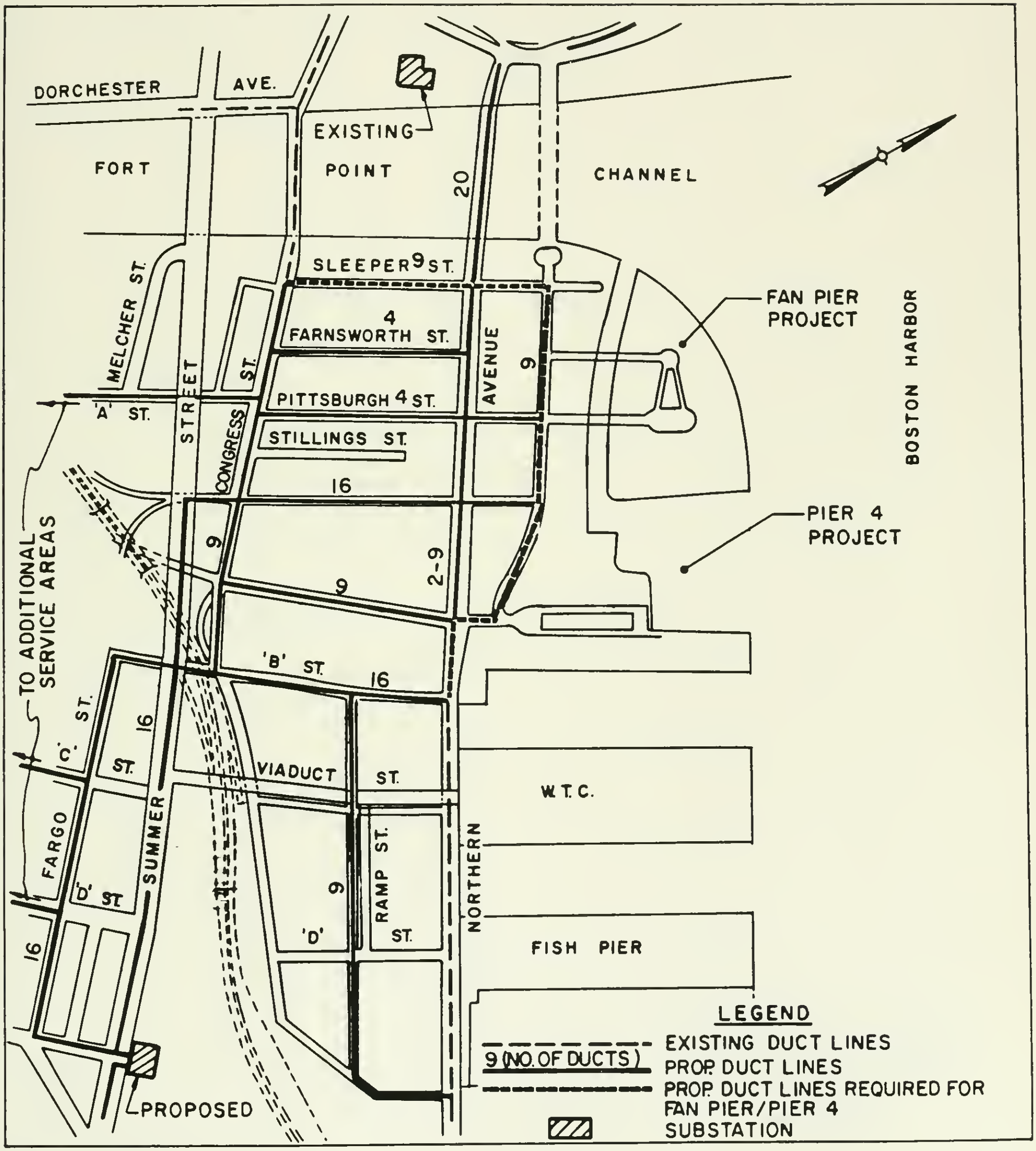


FIGURE VI.2-13
Fort Point Channel/
Commonwealth Flats
Long-Term Development
Gas System

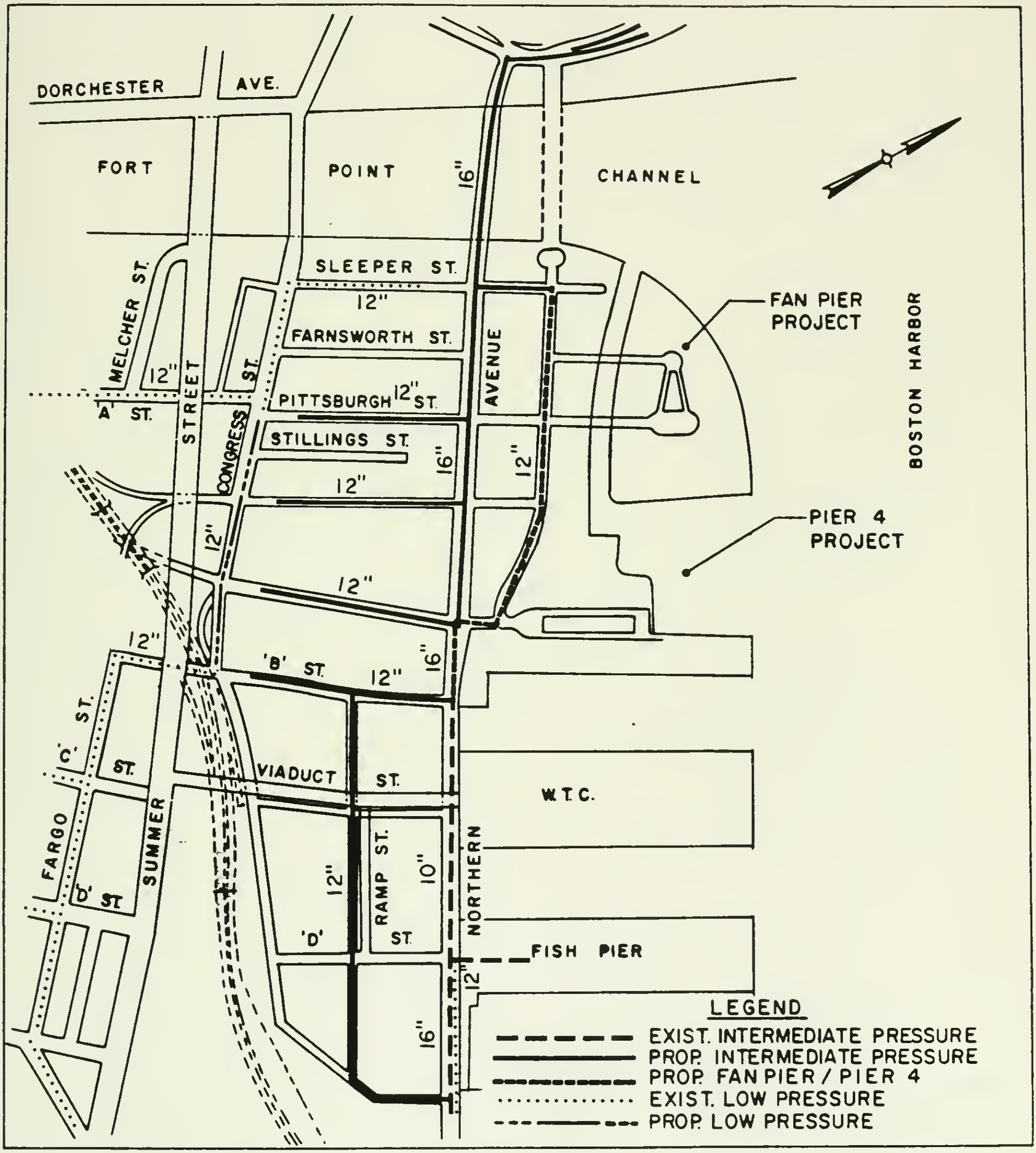
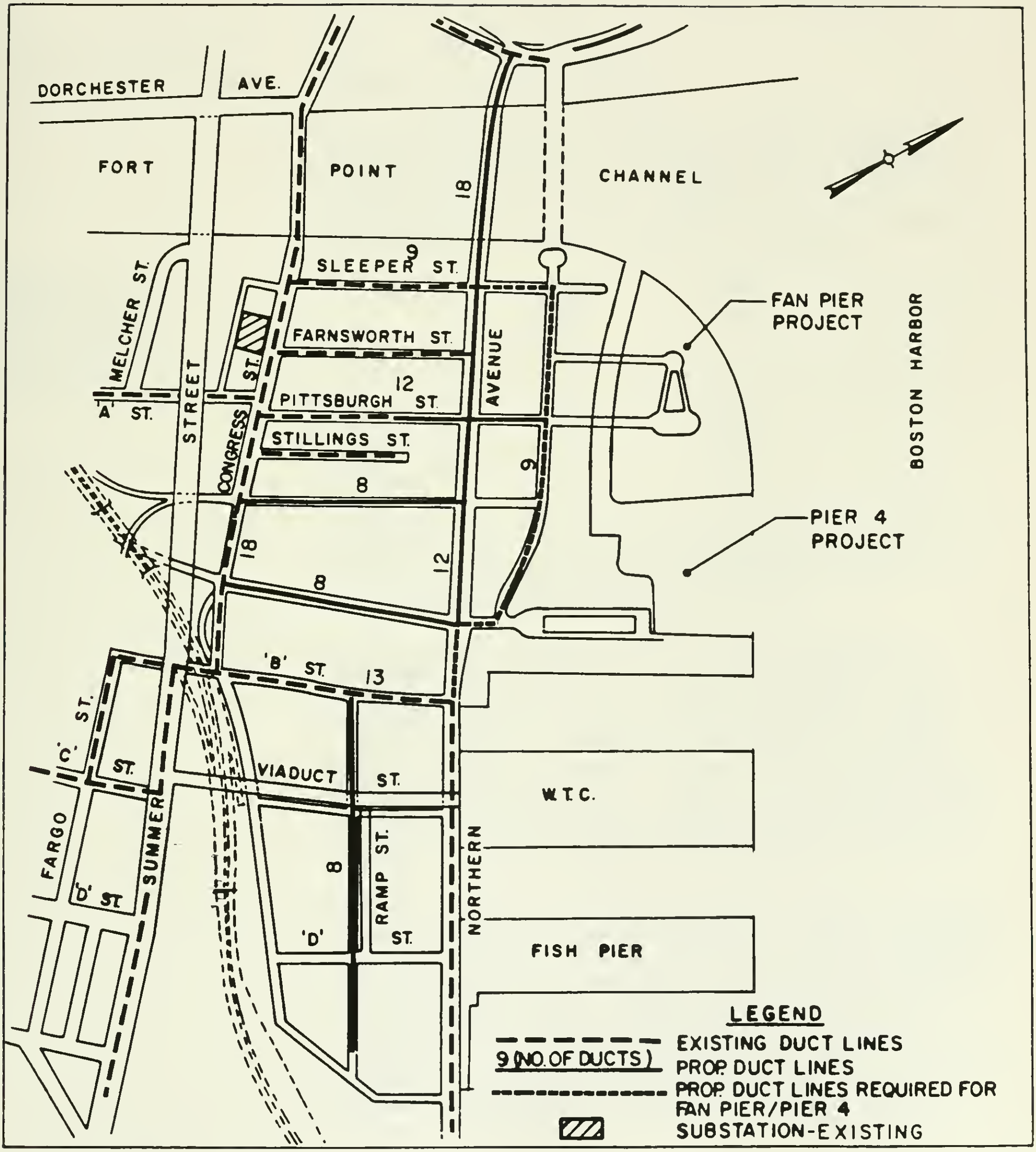


FIGURE VI.2-14
Fort Point Channel/
Commonwealth Flats
Long-Term Development
Telecommunications
System



PROBABLE PROJECT IMPACTS

The Fan Pier and Pier 4 Developments will create increased demands on all of the utility systems in the project area. In addition, the proposed projects will require the relocation of several existing systems in Existing Northern Avenue as construction occurs. Estimates of the impacts of the developments on the existing infrastructure systems are discussed below:

- Sanitary Sewer System

Projects' Wastewater Generation

It is estimated that the proposed projects generate an average daily quantity of wastewater of 0.79 mgd and a peak wastewater flow of 1.45 mgd (See Table VI.2-1). Peaking factors of 3.0 for restaurants, 2.4 for office/retail and 1.5 for residential/hotel categories were assumed for these sites in this analysis.

Table VI.2-1
Project Wastewater Flow Estimates:
Fan Pier and Pier 4
Year 1995

	Average Daily (MGD)	Peak (MGD)
Fan Pier	0.53	0.956
Pier 4	0.26	0.491
Combined Total	0.79	1.447

These flows are based largely on the Title V standards of the Massachusetts Department of Environmental Quality Engineering Sanitary Code.

Actual flows generated by the Fan Pier and Pier 4 Developments may be somewhat less than the estimates presented in Table VI.2-1. The average daily flows presented here and elsewhere in this Section are based largely on Title V Sewage Flow estimates, which more closely approximate maximum daily flows, rather than average daily quantities. Also, it is anticipated that sewage flow reduction will be achieved by the installation of water conservation devices described under the section "Mitigation Measures" in this EIR.

The Fan Pier site is currently used for warehousing and at-grade parking. Santoro's Sub Shop on Pier 1 produces the only wastewater flow from the site. Given estimates that Anthony's Pier 4 Restaurant generates an average daily wastewater flow of approximately 0.044 mgd (Preliminary Design Report, O'Brien & Gere, 1982), and estimating a relatively small wastewater flow from the Santoro Sub Shop, the total flow generated by the two proposed developments represents an average daily increase of about 0.74 mgd over present conditions.

In addition to the wastewater flows presented herein, floor drainage from the garages in the Fan Pier and Pier 4 Developments will also be directed to the sanitary sewer system. It is anticipated that this drainage will flow by gravity to structures for gas, oil and grease separation, and then will be pumped to the sanitary sewer system.

Adequacy of Sewer System

As found in the master planning effort, the existing sanitary sewer systems located in the study area of the Fort Point Channel/Commonwealth Flats section of Boston do not have adequate capacity to service the area's long-term development needs. Because of this concerns raised by public agencies with regard to the surcharging of existing systems, the Fan Pier and Pier 4 Developments' sanitary sewage will not discharge to the existing system located in Northern Avenue.

A new system, see Figure VI.2-15, will be installed to service the Fan Pier and Pier 4 Developments and adjacent developments. This system will be designed to be compatible with the long-term master plan systems shown on Figure VI.2-8. It is planned to initially discharge to the recently constructed 18 inch diameter sanitary system in Northern Avenue near the intersection with Viaduct Street. It is planned that the remainder of the new system will be con-structed and brought on-line as the projects are built out and before the sanitary discharge exceeds the capacity of the existing 18 inch pipe. The details and schedule of construction of this new system will be closely coordinated with BWSC and other interested public and private agencies.

Combined Sewer Overflows

The North Branch of the South Boston Interceptor receives wastewater from the Summer and "E" Street pumping station. The Interceptor is of sufficient capacity, if clean, to carry 2.5 times the average dry weather sewage flow (ADWF) projected for the year 2010. At 3.5 times the ADWF, an overflow occurs at the regulator located at "D" Street and West First Street (see Figure VI.2-2). This was reported by Metcalf & Eddy in their February 1985 Final Draft Facility Study for BWSC. Metcalf & Eddy also showed average and peak dry weather flows for the Interceptor of 7.34 mgd and 12.13 mgd, respectively, in the year 2010. This ratio of peak to average dry weather flow is about 1.65. Since this ratio is less than 3.5, no overflows along the Interceptor should occur during dry weather conditions. Furthermore, the increase in flow to this Interceptor from the Fan Pier and Pier 4 Developments of 1.45 mgd only increases this factor to 1.85 and therefore should not cause overflows to occur during dry weather conditions. During wet weather conditions,

which cause flows to meet or exceed 3.5 times the ADWF, some wastewater flow will be contributed to the overflow by the Fan Pier and Pier 4 Developments.

The 1985 Boston Wastewater Facilities plan prepared by Metcalf & Eddy shows that, once the North Branch of the South Boston Interceptor is cleaned, it will have a capacity of more than 2.5 but less than 3.5 times the estimated year-2010 average dry weather flow (ADWF) of 7.34 mgd or approximately 22 mgd. The ADWF from the Fan Pier and Pier 4 development is estimated to be 0.74 mgd, or less than 4 percent of the interceptor's theoretical capacity. The impact of the proposed developments' sanitary discharge will be relatively insignificant on both the frequency and volume of CSO discharges. In addition it should be noted that the flow from the developments will be sanitary sewage only as the storm drainage will be separated at the project sites and discharged to the Harbor.

■ Storm Drainage

All drainage from the Fan Pier and Pier 4 Development's site roadway circulation systems, paved parking area, roof drains, and pedestrian and landscaped areas will be discharged to the Boston Inner Harbor by way of on site collection systems (Figure VI.2-16). Discharge of gas, oil and grease into the Harbor will be minimized by gas/oil separator structures constructed as part of the developments. Sidewalks along Northern Avenue will drain to the street storm drainage system.

The Fan Pier and Pier 4 development plans will not increase the flows of storm drainage to the Harbor as the existing site drainage discharges directly to the harbor waters. The existing and proposed surface treatments of the parcels are similar in their runoff characteristics so that the volume of discharge will be relatively equal between the existing and proposed sites. The existing storm drainage does not benefit from separation facilities, thus it can be assumed that the quality of run-off to be discharged from the proposed systems (which will have these facilities) will be improved to a great extent.

Northern Avenue adjacent to the development sites is presently drained by the remnants of two small drainage systems at the Fan Pier and Pier 4. The planning underway for the reconstruction of Existing Northern Avenue includes the narrowing of the roadway pavement which would require a new storm drainage system. The Existing Northern Avenue reconstruction is a proposed Massachusetts Department of Public Works (MDPW) Urban Systems Project to be designed by the City of Boston. This Urban Systems Project is related to the MDPW Relocated Northern Avenue Bridge project being designed by the MDPW.

Project Water Demand

Demand for domestic water to be generated by the Fan Pier and Pier 4 Developments has been projected at 880,000 gpd (610 gallons per minute (gpm)) average daily rate and, 1130 gpm peak rate. This estimate is based upon the DEQE Title V Sanitary Code wastewater flow calculations, increased to account for consumptive water use: human use, process water, irrigation, cooking and other miscellaneous uses, including air conditioning make-up water. Estimated water demand is presented in Table VI.2-8.

Table VI.2-2
Projected Water
Demand Estimates:
Fan Pier and Pier 4
Year 1995

	Fan Pier	Pier 4*	Total
Domestic Water	0.59 mgd	0.29 mgd	0.88 mgd
Air Conditioning Make-Up Water (Peak)	0.39 mgd	0.14 mgd	0.53 mgd
Combined Total	0.98 mgd	0.43 mgd	1.41 mgd

*These values include the flows generated by the existing Anthony's Pier 4 Restaurant.

The incremental demand for domestic water due to site development is estimated to be an average daily flow rate of 830,000 gpd, or about 580 gpm. The total peak air conditioning make-up water consumption rate is estimated to be an additional 530,000 gpd.

Adequacy of Water Systems

The average daily demand shown in Table VI.2-2 could be adequately supplied to the site by the existing system based on computations of field data for a hydrant discharge test performed by BWSC in December 1984 on the low service system near the intersection of Melcher Street and "A" Street. This hydrant discharge test was performed on the distribution main at the intersection of Melcher Street and "A" Street which indicated a low service system capacity of 7230 gpm at a system residual pressure of 20 psi. The data from this discharge test was used to estimate the available system capacity for the low pressure service at the Fan Pier and Pier 4 Developments sites. Computations for the system capacity at the development sites was estimated to be 4,200 gpm at a system residual pressure of 20 psi. This indicates that the maximum water demand for the Fan Pier and Pier 4 Developments can be adequately supplied by the low pressure water system. At the peak demand rate of 1130 gpm, system residual pressure would be decreased to about 56 psi.

The low service system lines serving this area are very old, but renovations have been performed in recent years such as cleaning and cement lining of the 30-inch transmission main in 1971 and the replacement of a smaller main in Sleeper Street in 1983. Based on the configuration of the entire piping system network serving the development area, it is reasonable to expect that the distribution system could deliver to the Sleeper Street and Northern Avenue area adequate water for the Fan Pier and Pier 4 Developments.

The existing 12 inch distribution line located in Northern Avenue is within the influence of the construction of both the Fan Pier and Pier 4 Developments for its entire length on existing Northern Avenue. This line will be reconstructed in a parallel alignment in the middle of the roadway adjacent to the 30 inch transmission line from the "B" Street/Northern Avenue to the proposed Sleeper Street/Northern Avenue intersections. This reconstruction will also require that new taps be made between the existing 30-inch transmission line and the proposed distribution line. The existing 30 inch transmission line is within the influence of a portion of the proposed Pier 4 construction and will be relocated from the "B" Street/Northern Avenue intersection to the Pier 4 entry drive/existing Northern Avenue intersection. The planned Low Service water system required to service the Fan Pier and Pier 4 Developments is shown on Figure VI.2-17. The scope and details of this construction will be closely coordinated with the BWSC, the roadway reconstruction and the project requirements.

The High Service system flows needed for the proposed Fan Pier and Pier 4 Development sites are based on expected building heights, floor areas, materials, occupancy, and the sprinkler systems to be used. Based on a hydrant flow test performed in the area of "A" Street and Summer Street by BWSC in July, 1983, the high service system capacity was estimated to be approximately 3,700 gallons per minute at a residual pressure of 20 psi. The needed fire flow has been estimated to be approximately 3500 gpm for these developments. The flexibility and reliability of the sprinkler systems for the Fan Pier and Pier 4 Developments will be increased with installation of fire flow pump systems and the installation of division gates between the Low and High Service water systems in the buildings; fire flows from the High Service main may be augmented from the Low Service main by opening the division gates. The planned High Service water distribution system for the Fan Pier and Pier 4 Developments is shown on Figure VI.2-18. The developers will consult with the City Fire Department and the BWSC during the design process to insure that the systems are adequate for the required fire flows.

■ Electric System

The existing electric supply system in Northern Avenue needs to be augmented to support the anticipated electrical loads of the Fan Pier and Pier 4 sites according to the Boston Edison Company. The electrical loads projected for the Fan Pier and Pier 4 Developments include heating and cooling, hot water, cooking, lighting and other electrical requirements. Even if space heating is fueled by gas or oil, the remaining cooling, hot water, cooking, lighting and other electrical demands would also require augmentation to the existing electrical infra-structure.

Boston Edison anticipates that a new substation will have to be built in the Northern Avenue area to furnish the electricity needs for the long-term development sites. In addition, if future developments are to be heated electrically, new duct/manhole systems and a new substation would be required. If the developments are not electrically heated, Boston, Edison still anticipates a substation installation in order to furnish power to the adjacent Commonwealth Flats development area south of Northern Avenue to Summer Street and easterly to the Boston Marine Industrial Park. A minimum size land parcel of 10,000 square feet will be required for a substation location within the Fort Point Channel/Commonwealth Flats area. The proponents will continue to coordinate efforts with the Boston Edison Company and other interested parties to develop a final electric system for the area.

A temporary scenario to meet the electric load requirements of the Fan Pier and Pier 4 Developments before implementation of the final distribution network system has been conceptually agreed to with BECO personnel. This requires the construction of a conduit and manhole system from Congress Street in Sleeper Street and in existing Northern Avenue to supply electric power from the existing BECO Atlantic Avenue substation to the development sites, see Figure VI.2-19. This system would replace the present distribution system located in existing Northern Avenue which is within the influence of the proposed construction of both the Fan Pier and Pier 4 Developments. The proposed system will be designed for inclusion in the final network system for the area. The existing 115 Kv transmission line in Northern Avenue is also within the influence of a portion of the Pier 4 Development construction and will have to be relocated. Details of the schedule and limits of required construction will be coordinated with BECO personnel.

■ Gas System

The Boston Gas Company will have to increase its existing gas supply capabilities to meet the anticipated gas loads to the Fan Pier and Pier 4

Development sites. The gas loads may include cooling, hot water, cooking and heating requirements. The existing 16-inch intermediate pressure (I.P.) gas main in Northern Avenue between the Boston Marine Industrial Park and "D" Street will need to be extended westerly to the development sites to supply these potential gas demands. The Boston Gas Company, in anticipation of this increased demand, has upgraded its service to the "B" Street/Northern Avenue intersection by slip lining the 12-inch main and interconnecting this line with their 16-inch intermediate pressure line in Northern Avenue. This will allow the extension of the intermediate pressure line to meet the Fan Pier and Pier 4 Development service requirements, see Figure VI.2-20. This also relieves the load presently on the low pressure gas system and should improve the ability to meet other area wide load demands on that system. The existing 12-inch gas line in Northern Avenue is within the influence of the construction of both the Pier 4 and Fan Pier Developments and will be abandoned during the project construction. The function of this system will be replaced by the new intermediate pressure line to be built in existing Northern Avenue. The developers will continue to coordinate efforts with the Boston Gas Company.

■ Telecommunications System

Northern Avenue adjacent to the Fan Pier and Pier 4 Development sites is presently provided with telecommunications service utilizing overhead wires on utility poles. New England Telephone anticipates that the sites will be served by installation of an underground duct/manhole system, see Figure VI.2-21. New England Telephone is presently constructing portions of this system from its existing facility at Congress and Farnsworth Streets utilizing both conventional wiring and fiber optic systems. The upgrading plans are considering not only the Fan Pier and Pier 4 sites but also the entire Fort Point Channel/Commonwealth Flats area in South Boston. The proposed duct/manhole system is also planned to be utilized to carry emergency communications lines. The developers will continue to coordinate efforts with New England Telephone.

FIGURE VI.2-15
Fan Pier and
Pier 4
Developments
Proposed Sanitary
Sewer System

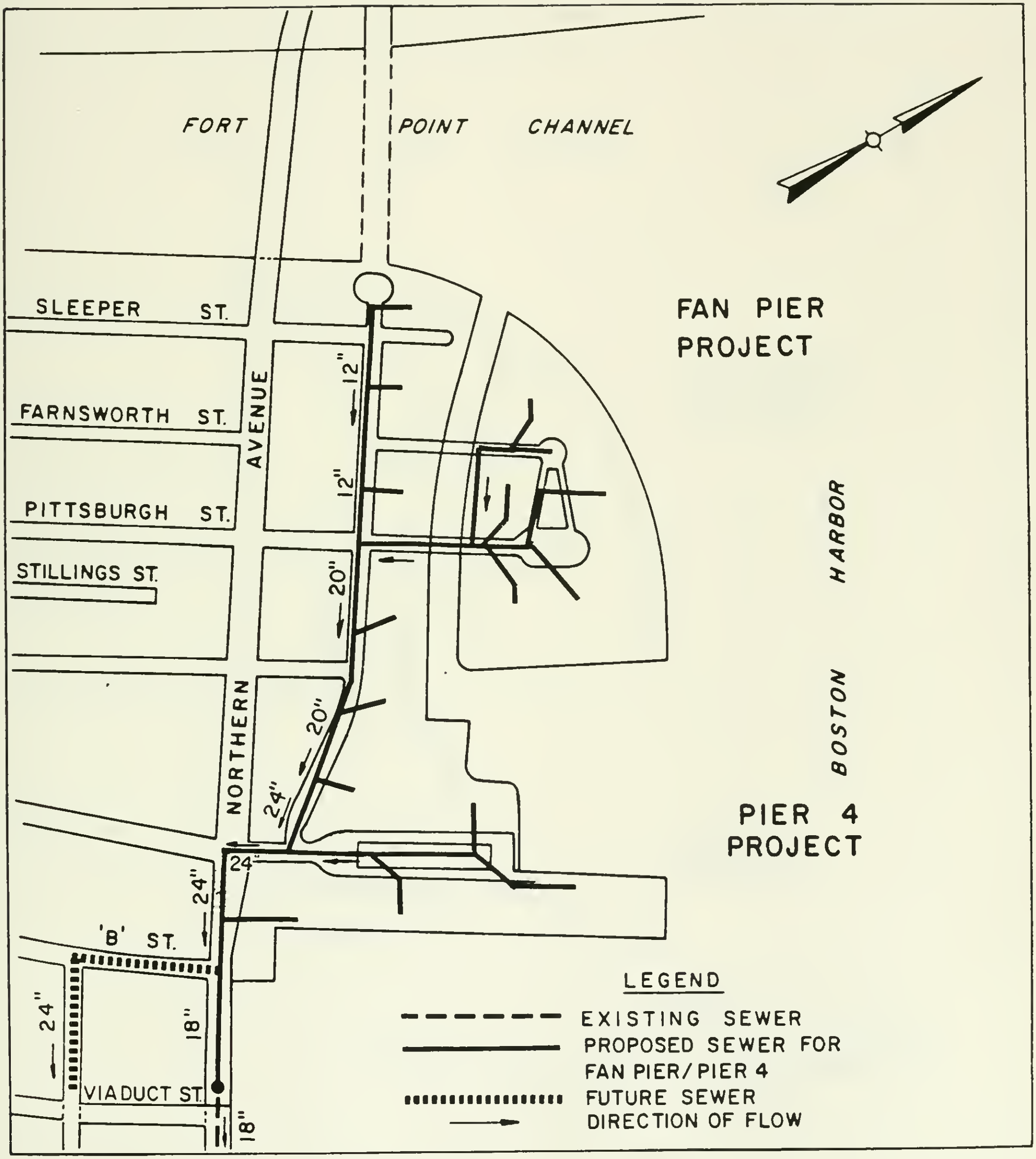


FIGURE VI.2-16
Fan Pier and
Pier 4
Developments
Proposed Storm
Drain System

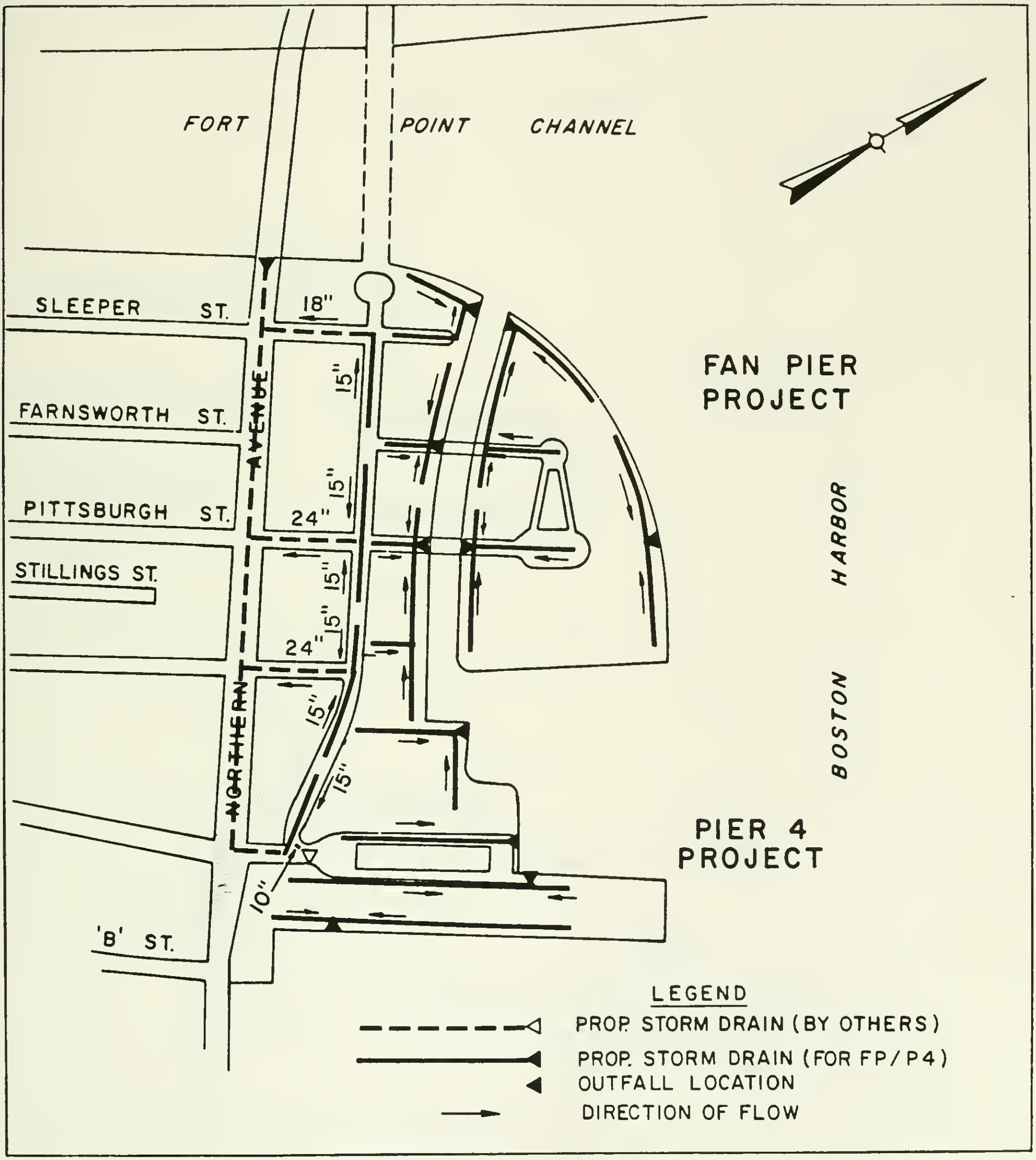


FIGURE VI.2-17
Fan Pier and
Pier 4
Developments
Proposed Low
Service Water
System

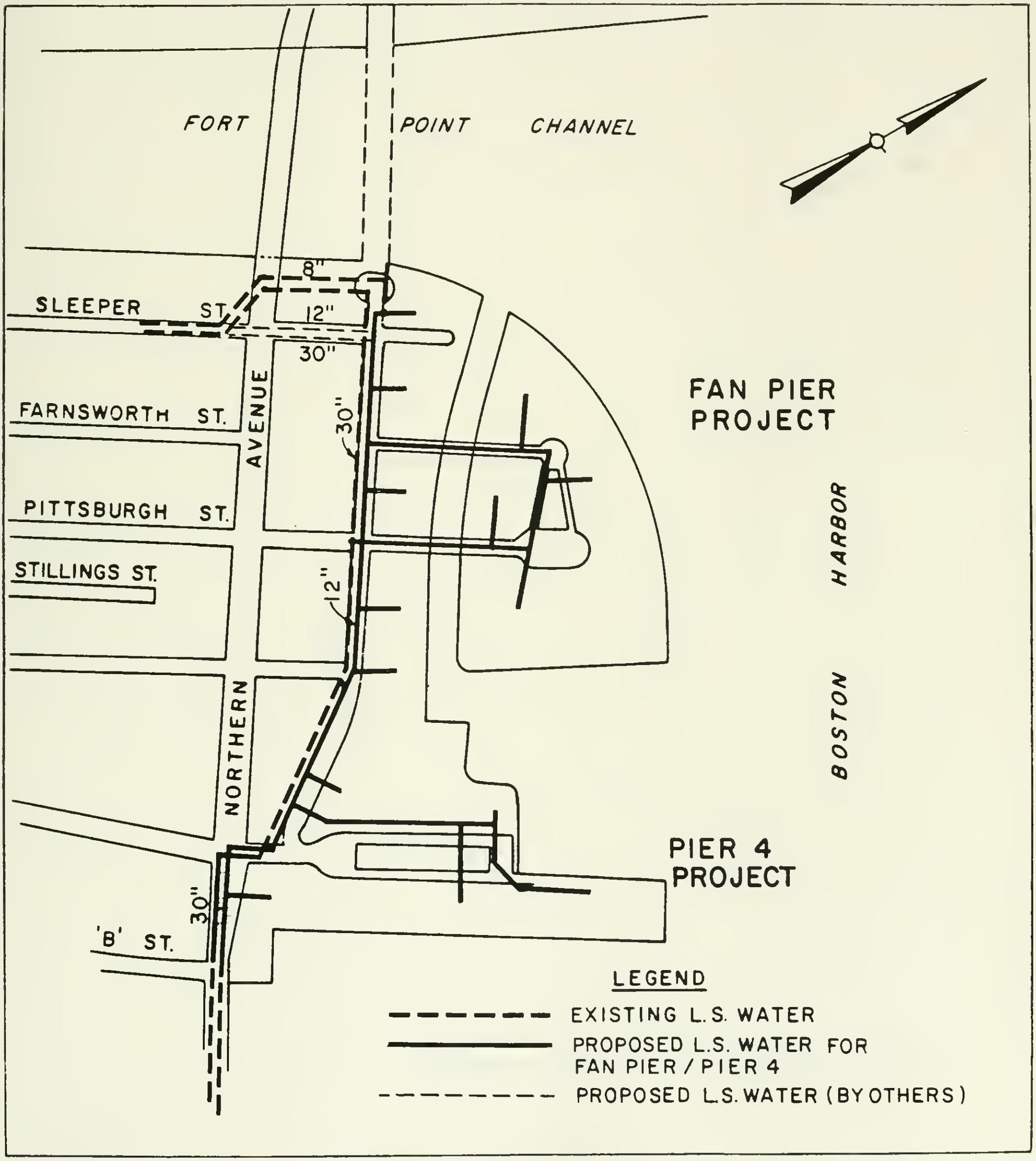


FIGURE VI.2-18
Fan Pier and
Pier 4
Developments
Proposed High
Service Water
System

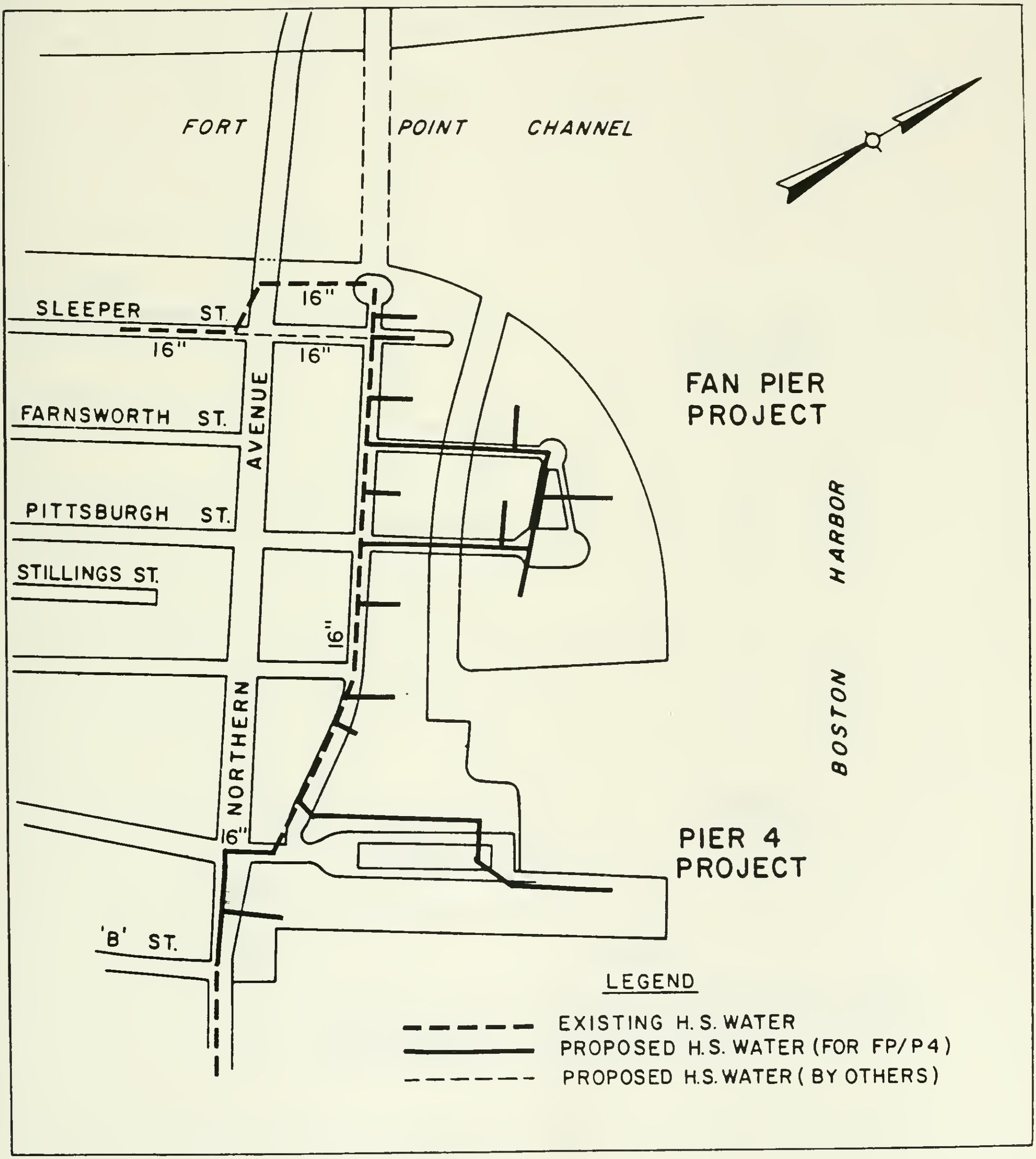


FIGURE VI.2-19
Fan Pier and
Pier 4
Developments
Proposed
Electric System

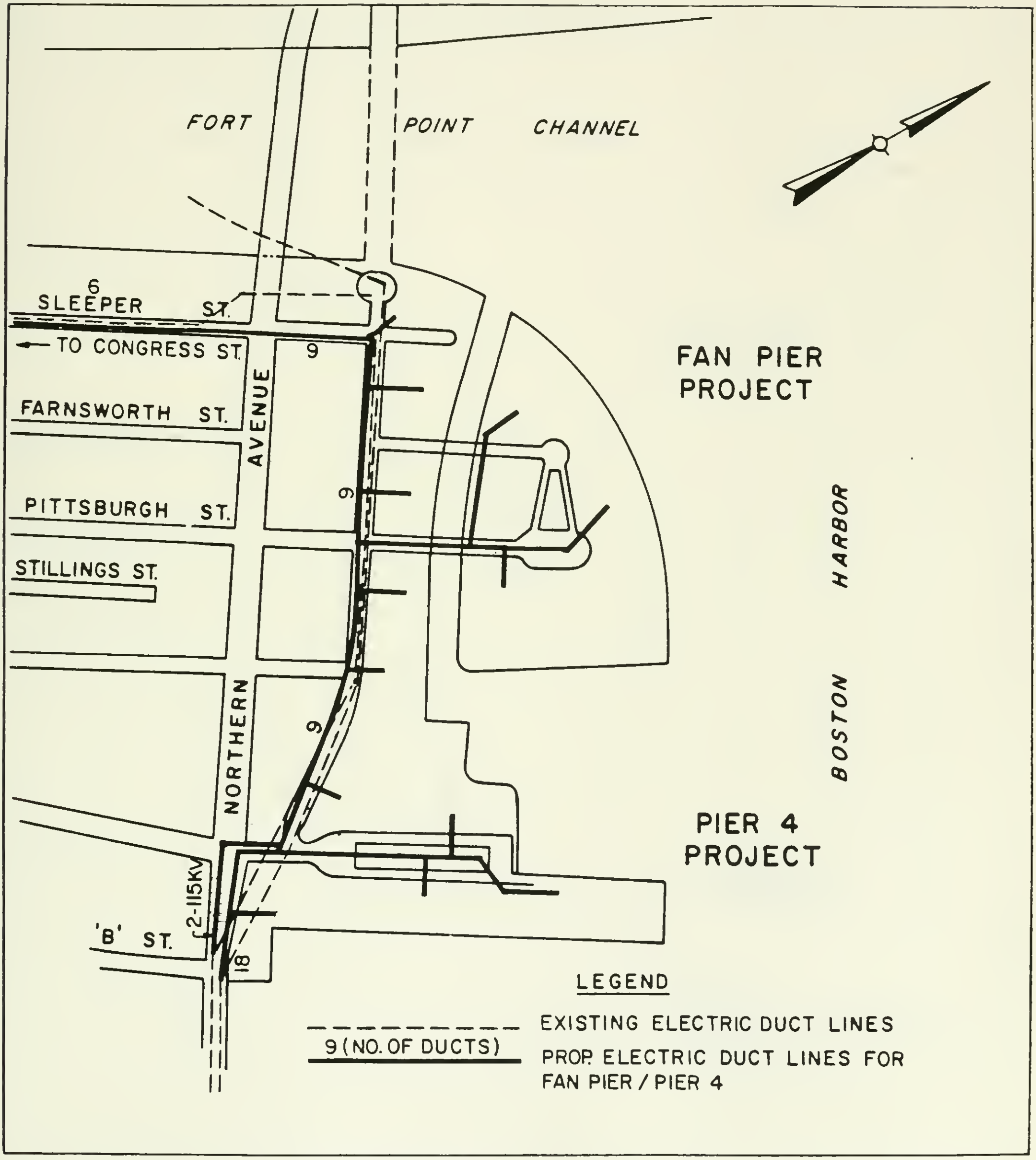


FIGURE VI.2-20
Fan Pier and
Pier 4
Developments
Proposed
Gas System

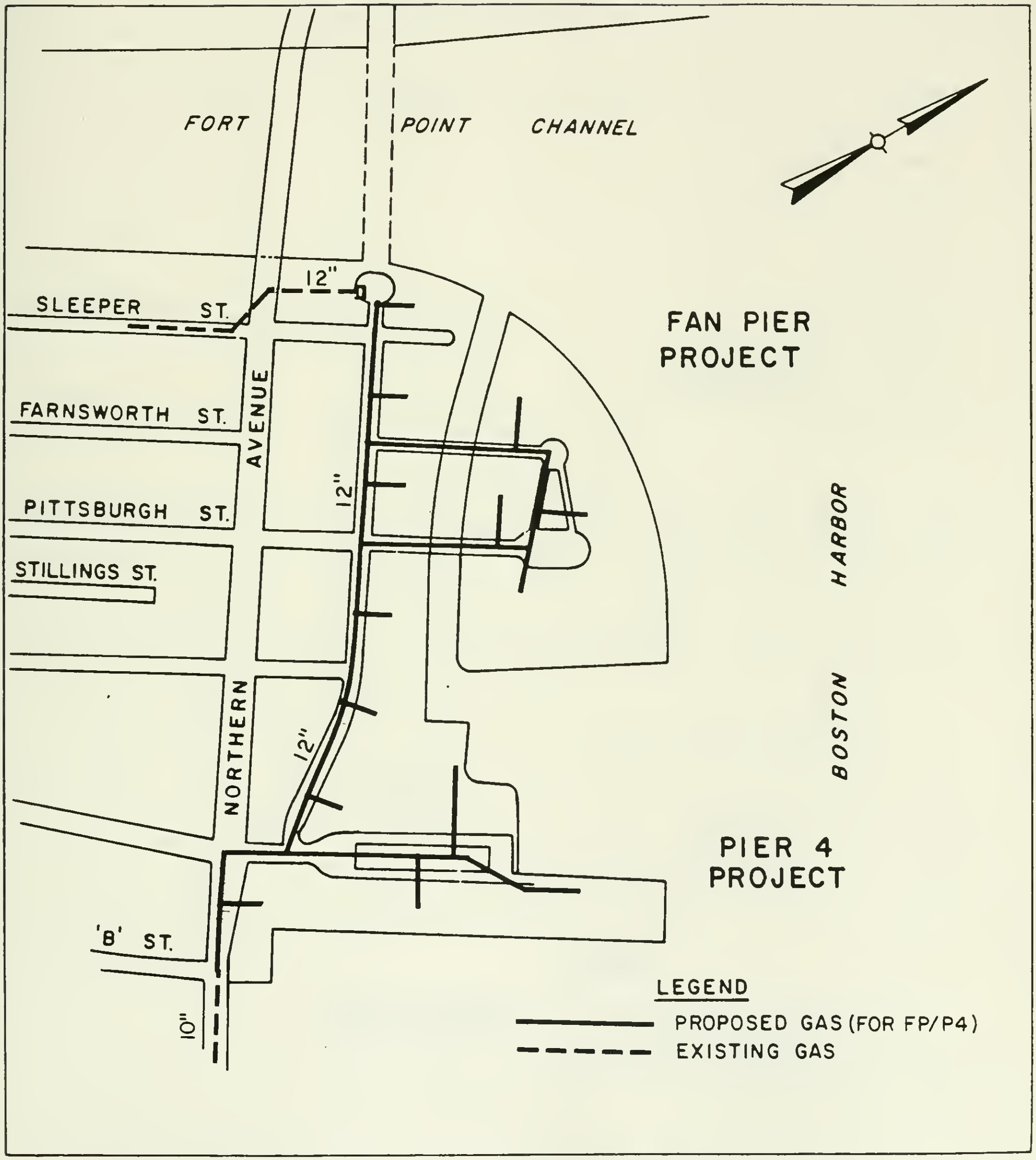
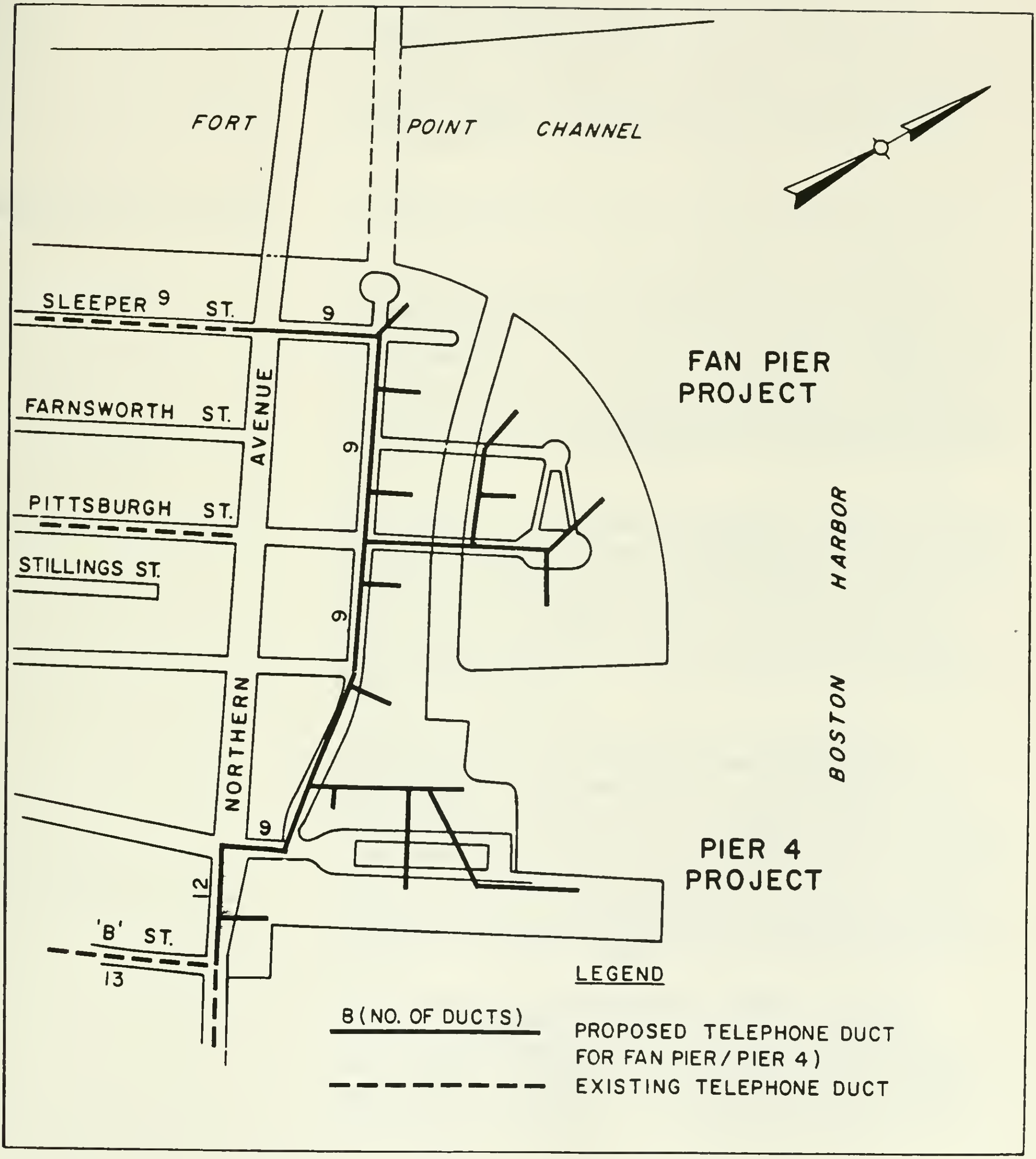


FIGURE VI.2-21
Fan Pier and
Pier 4
Developments
Proposed
Telecommunications
System



MITIGATION MEASURES

In an effort to mitigate adverse impacts of the Developments upon the existing sanitary sewer, water supply, storm drainage, energy and telecommunications systems, the developers will continue to coordinate with BWSC and the utility companies as well as with the Executive Ofice of Transportation and Construction, the Massachusetts Department of Public Works, Massport, the Boston Redevelopment Authority and other area developers. Regardless of which final system configurations are adopted, the following specific measures will be employed to prevent or mitigate potentially adverse effects of the proposed Developments on the surrounding infrastructure systems.

■ Sanitary Sewer System

Several mitigation measures will be used to minimize adverse effects associated with sewage generation.

A new sanitary sewage collection system will be constructed with the participation of the proponents in the Fort Point Channel/Commonwealth Flats area to meet the requirements of the Fan Pier and Pier 4 Developments. This system will be constructed to conform to on-going area-wide infrastructure planning efforts to assure that it allows for long-term development of the area without adversely impacting the adjacent collection systems.

Concerning on-site mitigation, grease traps that meet DEQE Title V Sanitary Code requirements will be provided in all restaurant kitchen facilities, and they will be maintained according to BWSC regulations. In accordance with the State Building Code, water conservation devices, such as low-flow toilets and flow restricting faucets and shower heads, will be used to reduce water use and the quantity of sanitary wastewater discharged from the developments.

As previously mentioned there are neither combined sewers nor combined sewer overflows within the development areas. However, the North Branch of the South Boston Interceptor, which conveys wastewater from the development areas, does have combined sewer overflow locations. BWSC is planning to clean the North Branch of the South Boston Interceptor in the Fall of 1986 and Spring of 1987. It is anticipated that removal of the deposition in this interceptor will reduce the number of overflow occurrences experienced along this sewer.

BWSC is presently instituting a program of regular inspection and maintenance of all their overflow structures to assure that they are operating correctly. This program is intended to assure that overflows from the system are minimized to the extent possible until additional flow control and treatment facilities can be implemented.

A proposed combined sewage overflow treatment facility for overflows into Fort Point Channel and Boston Harbor is high on the Extended Portion of the Massachusetts Construction Grants Project Priority List. This MWRA facility together with the proposed South Boston CSO Consolidation Pipeline will intercept and provide primary treatment for certain overflows along and tributary to the North Branch of the South Boston Interceptor.

- Storm Drainage System

Surface drainage from the interior roadway circulation systems, paved surface parking areas, and pedestrian and landscaped areas within the development sites will be discharged through separate storm drain systems to the Inner Harbor. Gas, oil and suspended solids separators will be constructed and maintained in each storm drain in accordance with federal, state and local requirements to minimize discharge of pollutants to the Harbor. Maintenance programs will be implemented that will include: "maintenance of ground" activities (street sweeping, public area refuse pick up, etc.) as well as operational maintenance of the separators proposed. Roof drains and cooling/circulation waters from buildings will also be discharged into the Harbor in accordance with applicable federal, state and local regulations.

- Water Supply Systems

In accordance with the State Building Code, water conservation devices, such as low-flow toilets and flow restricting faucets and shower heads, will be used to reduce the water demand on the low service water system.

A new Low Service Water distribution line will be constructed in existing Northern Avenue with adequate capacity to supply the needs of the Fan Pier and Pier 4 Developments. This line will be constructed with the participation of the proponents in accordance with BWSC requirements, and it will meet the requirements of the area-wide infrastructure planning for the Fort Point Channel/Commonwealth Flats area.

- Electric, Telecommunications and Gas Systems

Measures to mitigate adverse impacts due to the installation of the electric, gas and telecommunications systems required to service the development sites will include:

o Coordinated facilities planning with utility providers, area users and public agencies.
o Installation of utilities underground to improve visual quality.

- Incorporation of energy conservation into project design and operation.
- Coordination of construction activities scheduling to minimize traffic disruptions and interruption of utility service.
- Coordination with utility providers to assure the maintenance of existing levels of service to adjacent areas of the City as well as to assure that systems constructed to service Fan Pier and Pier 4 are compatible with the infrastructure planning for the Fort Point Channel/Commonwealth Flats area.

III WATER AND SEWER COMMITMENTS

INTRODUCTION

As part of their ongoing coordination with Boston Water and Sewer Commission (BWSC), the Developers have made substantial commitments to funding a variety of improvements to the water and sewer systems that will serve the Fan Pier and Pier 4 Developments. All system improvements will be designed and constructed to BWSC standards, and together will lead to the betterment of Boston Harbor water quality.

Appendices A, B, and C of this report provide the written documentation for each of the commitments summarized in the following sections.

COMMITMENTS.

■Sanitary Sewer System

As shown in the Infrastructure Analysis, additional sewer facilities are needed in the BWSC sanitary sewer system to serve the proposed Fan Pier and Pier 4 Developments. The Developers have agreed to construct at their expense all such sewer facilities needed for the Fan Pier and Pier 4 Developments (see Fig. VI.2-15, in Chapter II of this report). These on-site and off-site sewer system improvements will contribute to the improvement of water quality in the Harbor.

According to BWSC, other off-site sewer facilities--including the Summer Street Pump Station (capacity 8.3 mgd)--have adequate average and peak flow capacity to accommodate areawide development through the year 2010.

Combined Sewer Overflows

To rectify long-standing problems with off-site sewage systems, the Developers have committed up to $250,000 to reconstruct a portion of the North Branch of the

South Boston Interceptor at the corner of A and West First Streets in South Boston. The existing structural deficiency at this location presently restricts flows and aggravates combined sewer overflows to Boston Harbor. The reconstruction of the Interceptor in conjunction with BWSC's scheduled cleaning of the Interceptor (April-December 1987) will eliminate current dry weather combined sewer overflows and will dramatically reduce the incidence and volume of wet weather overflow.

2:1 Inflow and Infiltration

Inflow is the rainwater or uncontaminated cooling water introduced to the sewer system illegally, through foundation drains, cellar drains, sump pumps, or roof leaders. Infiltration occurs when the groundwater level rises above the pipe crown and enters the sewer system through cracks, breaks, or deformities. The Massachusetts Water Resources Authority's 2:1 Inflow and Infiltration (I/I) reduction policy requires a developer to decrease the amount of inflow and infiltration in a municipality's sewer system in a ratio of 2 to 1 as compared to the amount of sanitary sewage discharge the proposed project creates.

In response to this regional and municipal goal, the Developers have agreed to a combination of on-site and off-site improvements. To the extent necessary to achieve the 2:1 I/I goal, the Developers agree to pay for reconstruction of sanitary sewer facilities in existing Northern Avenue. In addition, the Developers will fund the reconstruction of a portion of the drainage and sewer facilities in the street grid south of existing Northern Avenue, to the extent such reconstruction is needed to satisfy the 2:1 I/I goal for the Projects (see Figure V1.2-8, in Chapter II of this report).

Off-site Connections

The proposed sewer system for the Fan Pier and Pier 4 Developments includes a connection to the existing 18-inch pipe in Northern Avenue, recently constructed by Massport (see Figure VI.1-15, in Chapter II of this report). According to BWSC, this 18-inch sewer between B Street and Trilling Way is unable to convey the projected 2010 peak sewage flows without surcharging the system. However, BWSC acknowledges that this sewer can receive sewage from the Fan Pier and Pier 4 Developments for some interim period. The Developers will work toward an agreement with Massport to allow, in the short term, use of Massport's 18-inch sewer pipe by the Fan Pier and Pier 4 Developments.

For the long term, the analysis indicates that a 24-inch pipe will be needed to accommodate sewage flows for the area. While several alternative configurations are under investigation, a plan routing the system across Commonwealth Flats is considered most efficient. The Developers will work toward an agreement with Massport to allow an easement for this new sewer line across the Commonwealth Flats. This sewer line will be constructed by the Developers and others connecting to this sewer system.

■Storm Drainage System

Separated System

The Developers' commitments include construction of a separate storm drainage system that will discharge storm water from the Fan Pier and Pier 4 sites roadway circulation systems, paved parking areas, roof drains, and pedestrian and landscaped areas into Boston Harbor (see Figure VI.2-16, in Chapter II of this report). The on-site collection systems will subject stormwater flows to sedimentation separation and skimming using BWSC-type catch basins. As a result of these facilities and change in land use, the quality of storm water drainage from the sites to the Harbor will greatly improve.

■Water Supply Systems

In addition to the sewer systems, the Developers have agreed to construct at their expense all water facilities needed for the Fan Pier and Pier 4 Developments and necessary to tie the Projects into the BWSC systems (see Figures VI.2-17 and VI.1-18, in Chapter II of this report).

The Developers have also agreed to upgrade the existing high service and low service water mains in existing Northern Avenue. For the high service water system in Northern Avenue, the Developers will fund the cleaning and cement lining of the existing 16-inch service main. For the low service water system, the Developers will construct a new 12-inch service line in Northern Avenue for the length of the project sites.

Fire protection for the Developments will be supplied solely by either the high service or low service water systems, but not both. All construction will be done in accordance with BWSC standards and with their review and approval.

Water Conservation

In accordance with the State Building Code, water conservation devices, such as lowflow toilets and flow-restricting faucets will be used to reduce water demand on the water system. In addition, the Developers are committed to studying water conservation measures that

can be implemented at the sites and which go beyond state building code requirements. Consentini Associates, mechanical engineers representing the Developers, are investigating approaches to minimizing water consumption and sanitary discharge from the Projects.

Two basic systems will be investigated: (1) the domestic water system, and (2) the air conditioning system. Reductions in water use in these two systems will also reduce sanitary sewage generation. The approaches being considered include:

- Water conserving fixtures.
  - Additonal water conserving fixtures with lower design flows than those required by code.
- HVAC/system.
  - Air conditioning systems that utilize standard induced draft type evaporative cooling towers.
  - A water filtering system for cooling tower water.
  - A water softener to allow recirculation of the bleed water.
  - More sophisticated water treatment program to reduce bleed-water requirements.

The Developers will continue to coordinate with the BWSC on all issues pertaining to water conservation for the Projects.

IV INFRASTRUCTURE SCHEDULE

INTRODUCTION

No public funds will be required to meet the Fan Pier or Pier 4 Developments' public and private utility service needs. The total cost of planning, engineering, and construction of each of the required system modifications will be met by either direct expenditure of funds by the Developers or expenditure of funds by the utility suppliers in anticipation of future revenues generated by the developments' use of their services. All project utility systems are scheduled for construction between 1987 and 1990.

In addition to developing site specific utility plans, the Developers have prepared master plans for each of the major distribution/collection systems in the Fort Point Channel/Commonwealth Flats area of South Boston to assure that the system modifications necessary to support the Fan Pier and Pier 4 Developments reflect the needs of future area development. These master plan systems have been reviewed by each utility provider and have been accepted as a reasonable first step in developing service systems in the area. These plans are now being used as a basis for ongoing discussions with all concerned parties to work out specific details and system configurations.

The following sections summarize the responsibilities associated with each proposed utility system plan.

PUBLIC UTILITIES

The primary focus of the infrastructure planning for the Fan Pier and Pier 4 Developments has been the investigation of necessary measures to provide public

utility service to development sites. Both on-site and off-site improvements to the existing sanitary sewer, storm drainage, and water supply systems have been investigated.

■Sanitary Sewer Systems

On-site and off-site sewer system improvements to be undertaken by the Developers will contribute to the betterment of areawide services and will help contribute to the improvement of water quality in Boston Harbor (see Figure VI.1-15, in Chapter II of this report).

On-site, the Developers are responsible for the planning, engineering, and construction of the sanitary sewer system subject to the review and approval of BWSC.

Off-site, the Developers will plan, engineer, and construct those specific modifications to the existing sanitary sewer system required to accommodate the Fan Pier and Pier 4 Projects, including:

- Reconstruction of the sanitary sewer facilities in existing Northern Avenue.
- Reconstruction of a portion of the sewer facilities in the street grid south of existing Northern Avenue, to the extent such reconstruction is needed to satisfy the state's 2:1 I/I goal for the Projects.
- Willingness to work toward an agreement with Massport to allow, in the short term, use by Fan Pier and Pier 4 Developments of Massport's 18-inch sewer pipe in existing Northern Avenue.
- Willingness to work toward an agreement with Massport to allow, in the long term, an easement for a new sewer line across the Commonwealth Flats, to be constructed by the Developers and others who will use the sewer.
- Agreement to fund and implement replacement of a portion of the North Branch of the South Boston Interceptor at the intersection of A and West First Streets.

All system design details will be included in plans required to obtain site plan approval and sewer connection permits for the projects. Actual construction of the system modifications will be coordinated with site and roadway construction schedules to minimize impacts on traffic and existing service, and to ensure all required modifications are completed before project opening.

■Storm Drainage System

The Developers' plans for storm drainage will further contribute to improved water quality flows to the Harbor (see Figure VI.1-16, in Chapter II of this report).

On-site, the Developers are responsible for the planning, engineering, construction, and maintenance of the storm drainage system, including pollution-abatement facilities. System plans will be subject to the review and approval of BWSC.

Off-site, the Developers have agreed to pay for the reconstruction of storm drainage facilities in existing Northern Avenue. In addition, the Developers will fund the reconstruction of a portion of the drainage and sewer facilites in the street grid south of existing Northern Avenue, to the extent that such reconstructon is needed to satisfy the 2:1 inflow and infiltration goal for the Projects.

The Developers are also committed to ongoing coordination with the responsible agencies to ensure that adequate storm drainage systems are incorporated into the design of the new roadway systems adjacent to the Developments. It is anticipated that actual construction of these systems will be coordinated with site and roadway construction schedules to minimize impacts on traffic and existing service.

■Water Supply System

The Developers have agreed to construct at their expense all water facilities needed for the Fan Pier and Pier 4 Developments necessary to tie the Projects into the BWSC system (see Figures VI.2-17 and VI.2-18, in Chapter II of this report).

On-site, the Developers are responsible for the planning, engineering, and construction of the water supply/collection system, subject to the review and approval by BWSC. In addition, the Developers will commit to studying water conservation measures that can be taken at the sites and which go beyond state building code requirements.

Off-site, the Developers have committed to the funding, planning, engineering, and construction of those specific modifications to the water supply system required to accommodate the Fan Pier and Pier 4 Projects, including:

o Upgrading the existing high and low service water mains in existing Northern Avenue including the cleaning and cement lining of the existing 16-inch high water main and the construction of a new 12-inch low service water main.

- Relocating any water lines in Northern Avenue that may conflict with proposed building foundation construction.

Fire protection for the Developments will be supplied solely by either the high service or low service water systems, but not both. The Developers will continue to coordinate with BWSC on this issue.

All system design details and system descriptions will be included in the plans and reports required to obtain site plan approval. Such approval must be obtained before building permits are issued by the city.

Actual construction of the system modifications will be coordinated with site and roadway construction schedules to minimize impacts on traffic and existing service and to ensure all required modifications are completed before the project opening.

PRIVATE UTILITIES

The other component of the infrastructure planning for the Fan Pier and Pier 4 Developments includes the coordination of plans for private utility service to the sites. To this end, the Developers have considered both on-site and off-site steps to prevent any adverse impacts on the areas electric, gas, and telecommunications systems.

The Developers have investigated all public utilities in great detail and will continue to coordinate with utility providers to assure the maintenance of existing levels of service to the South Boston Community as well as to assure that systems constructed to service Fan Pier and Pier 4 are compatible with the infrastructure planning for the Fort Point Channel/Commonwealth Flats area.

■Electric Systems

On-site, the Developers are responsible for the planning, engineering, and construction of the Fan Pier and Pier 4 Developments electric system subject to the review and approval of Boston Edison Company.

Off-site, the Developers will continue their ongoing coordination effort with the Boston Edison Company (BECO) staff during the planning, engineering, and construction of distribution systems required to meet the Fan Pier and Pier 4 Developments' energy requirements (see Figure VI.2-19, in Chapter II of this report).

BECO will be responsible for the planning, engineering, and construction of any modifications required to its system to meet the Fan Pier and Pier 4 Projects' needs. The costs of these efforts will be born by BECO in anticipation of revenue generated by the projects.

The Developers will work with BECO and the responsible agencies to coordinate construction of the proposed system modifications site and local roadway construction to ensure the availability of the required electric capacity and to minimize the impacts on traffic and existing services.

It should be noted that BECO has stated that their studies indicate that the Fan Pier and Pier 4 Developments' electrical needs will be met from the existing Atlantic Avenue and L Street transformer station.

- **Gas System**

On-site, the Developers are responsible for the planning, engineering, and construction of the gas system subject to the review and approval of Boston Gas.

Off-site, the Developers will continue their ongoing coordination effort with Boston Gas staff during the planning, engineering, and construction of distribution systems required to meet the Fan Pier and Pier 4 Developments' energy requirements (see Figure VI.2-20, in Chapter II of this report).

Boston Gas will be responsible for the planning, engineering and construction of any modifications required for its system to meet the needs of the Fan Pier and Pier 4 Projects. The cost of these efforts will be born by Boston Gas in anticipation of revenue generated by the projects.

The Boston Gas Company, in anticipation of the necessity to increase its existing gas supply capability, has upgraded its service to the B Street/Northern Avenue intersection by slip lining the 12-inch main and interconnecting this line with their 16-inch intermediate pressure line in Northern Avenue. This will allow the extension of the intermediate pressure line to meet the Fan Pier and Pier 4 Development service requirements. This also relieves the load presently on the low pressure gas system and should improve the ability to meet other areawide load demands on that system.

The Developers will work with Boston Gas and the responsible agencies to coordinate the construction of the proposed system modifications with site and local roadway construction to ensure the availability of the required gas capacity and to minimize the impacts on traffic and existing service.

Initial modifications to the gas distribution system have been completed by Boston Gas in anticipation of the Fan Pier and Pier 4 Projects, and in coordination with the reconstruction of existing Northern Avenue.

- **Telecommunications System**

On-site, the Developers are responsible for the planning, engineering, and construction of the telephone system subject to the review and approval of New England Telephone (NET).

Off-site, the Developers will continue their ongoing coordination effort with NET staff during the planning, engineering, and construction of distribution systems required to meet the Fan Pier and Pier 4 Developments' telecommunications requirements (see Figure VI.2-21, in Chapter II of this report).

NET will be responsible for the planning, engineering, and construction of any modifications required to its system to meet the Fan Pier and Pier 4 Projects' needs. The costs of these efforts will be born by NET in anticipation of revenue generated by the projects.

The Developers will work with NET and the responsible agencies to coordinate construction of the proposed system modifications with site and local roadway construction to ensure the availability of the required capacity and to minimize the impacts on traffic and existing services.

NET is presently in the process of upgrading their facilities in anticipation of not only the Fan Pier and Pier 4 Developments, but also the full future development of the area. They have installed conduit systems in B Street, Pittsburgh Street, Farnsworth Street, and Sleeper Street that can be extended during the reconstruction of these roadways to meet the full build requirements of the area.

V APPENDICES

A Letter of 1/30/87 to the Boston Water and Sewer Commission from HBC Associates and the Boston Mariner Company, Inc.

B Letter of 2/2/87 to the Secretary of Environmental Affairs from the Boston Water and Sewer Commission.

C Letter of 1/15/87 to the Boston Water and Sewer Commission from Cosentini Associates (representing HBC Associates and the Boston Mariner Company, Inc.) to the Boston Water and Sewer Commission.

D Letter of 3/13/87 to HBC Associates and the Boston Mariner Company, Inc. from Parsons, Brinckerhoff, Quade & Douglas.

E Letter of 1/2/87 to the Secretary of Environmental Affairs from Boston Gas Company.

F Letter of 3/13/87 to HBC Associates and the Boston Mariner Company, Inc. from Parsons, Brinckerhoff, Quade & Douglas.

HBC ASSOCIATES

600 Atlantic Avenue
Suite 2100
Boston, MA 02210
617 367-0500

APPENDIX A

January 30, 1987

Mr. Charles Button, P.E.
Boston Water and Sewer Commission
10 Post Office Square
Boston, MA 02109

Dear Mr. Button:

HBC Associates and Boston Mariner Company, Inc. (the "Developers") have discussed water and sewer infrastructure requirements of the Fan Pier and Pier 4 developments with the Boston Water and Sewer Commission ("BWSC") in several recent meetings. During these discussions the following points were made:

1. In response to a letter dated December 1, 1986 from Charles Button of the BWSC, the Developers agree to study water conservation measures that can be taken at the site and which go beyond state building code requirements. By letter dated January 15, 1987, Cosentini Associates, mechanical engineering consultants for the Developers, responded to the BWSC letter by listing the various water and sewer measures to be studied. The Developers intend a continuing dialogue with BWSC on this issue.

2. The Developers agree to construct at their expense all water and sewer facilities directly related to the Fan Pier and Pier 4 developments and necessary to tie the projects into the BWSC systems. Included is the reconstruction of existing sanitary sewer facilities in existing Northern Avenue.

3. The Developers agree to meet the secretary's recommendation for 2:1 infiltration and inflow ("I and I") reduction by a combination of on-site and off-site improvements. To the extent necessary to achieve this 2:1 I and I goal, the Developers agree to pay for reconstruction of sanitary sewer facilities in existing Northern Avenue. (1) In addition, the Developers agree to pay for the reconstruction of a portion of the drainage and sewer facilities in the street grid south of existing Northern Avenue, to the extent that such reconstruction is needed (in addition to reconstruction of

existing Northern Avenue) to satisfy the 2:1 goal for the projects and assuming that such improvements are not funded by city, state or federal roadway or infrastructure reconstruction grants. This commitment is based upon what the Developers understand today to be the scope of this project. If this scope should change substantially in the future due to unforeseen circumstances, the Developers reserve the right to work with BWSC to achieve an acceptable solution. The Developers may take measures at their expense such as the installation of meters which allow the measurement of infiltration and inflow eliminated at the Fan Pier and Pier 4 sites by Developer improvements for purposes of meeting this 2:1 I and I goal.

4. The Developers agree to work toward an agreement with Massport to allow, in the short term, use by the Fan Pier and Pier 4 developments of Massport's 18" sewer pipe in existing Northern Avenue, and in the long term an easement for a new sewer line across the Commonwealth Flats, to be constructed by the Developers and others who will use the sewer.

5. The Developers agree to pay to fund and implement replacement of a portion of the North Branch of the South Boston Interceptor at the intersection of A Street and West First Streets. Peak flows in this Interceptor are now restricted at A Street as it passes beneath a storm drain. This commitment is based upon what the Developers understand today to be the scope of this project. If this scope should change substantially in the future due to unforeseen circumstances, the Developers reserve the right to work with BWSC to achieve an acceptable solution.

BWSC and the Developers agree that the sewer, water, and drainage system improvements committed to by the Developers will contribute to the betterment of areawide service and will help contribute to the improvement of water quality in Boston Harbor.

This letter sets forth all oral or written agreements to date among BWSC and the Developers. The Developers' obligations pursuant to this letter are, of course, conditioned upon construction of the Fan Pier and Pier 4 developments.

Yours very truly,

HBC ASSOCIATES

By: John J. Hall

BOSTON MARINER COMPANY, INC.

By: Ellen A. Watts

APPENDIX B

Boston Water and
Sewer Commission

10 Post Office Square
Boston, Massachusetts 02109
617-426-6046

February 2, 1987

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[illegible]

Secretary James S. Hoyte
Executive Office of Environmental Affairs
100 Cambridge Street, 20th floor
Boston, MA 02202

Attn: MEPA Unit

RE: Final Environmental Impact Report-EOEA #4426/4584
Fan Pier Development/Pier 4 Development

Dear Secretary Hoyte:

The Boston Water and Sewer Commission (BWSC) has reviewed the subject Final EIR and while the presented future sewer, water and drain systems in this section of South Boston advance the overall planning for the area in a responsible and technically feasible manner, such plans must not be considered BWSC master plans to be employed by future developments. The proposed sewer, water and drain system improvements to be undertaken by the Fan Pier/Pier 4 proponents will contribute to the betterment of BWSC areawide services and will help contribute to the improvement of water quality in Boston Harbor. Our comments are as follows:

1. North Branch of the South Boston Interceptor and Combined Sewer Overflows:

   A. BWSC has an on-going commitment to maintain and upgrade our sewerage systems to maximize the capacity of these sewers and to reduce the extent of combined sewage and to minimize sewage discharges into Boston Harbor. A contract for the cleaning of the subject Interceptor has been awarded by BWSC, and the cleaning operations to restore this Interceptor to its designed hydraulic capacity will commence in April 1987. This work is scheduled for completion in December 1987. The effect of this work will be to restore the Interceptor to its original design capacity, thereby reducing the occurence and volume of combined sewer overflows.

   B. Development assumptions for the South Boston area are presented in BWSC's 1985 Wastewater

Facilities Plan, but are augmented for the developments at Fan Pier/Pier 4 and projections for the McCourt (Cabot, Cabot and Forbes) property. BWSC analyses for sewer, water and drain systems in this part of South Boston are based upon a design year of 2010, well beyond the proposed completion of the Fan Pier/ Pier 4 developments in 1995. The hydraulic analyses performed to determine the impact of the proposed Fan Pier/Pier 4 developments on this Interceptor are based on (1). The Final EIR and supporting engineering documentation provided by the proponents' Engineer; (2). Development assumptions; (3). Full availability of the Interceptor's designed capacity; (4). Flow assumptions of the tributary local sewerage systems (Refer to Paragraph 2D), and (5). The correction of a hydraulic deficiency caused by a section of depressed sewer which presently exists at the intersection of "A" Street and West First Street. This existing structural deficiency aggravates combined sewer overflows into Boston Harbor, because it restricts the design capacity of the Interceptor. The Fan Pier/Pier 4 developers have agreed to undertake the reconstruction of this section of the Interceptor so as to reduce the incidence and volume of combined sewer overflows.

C. The Fan Pier/Pier 4 developers have agreed to implement the Secretary's recommendation for a 2:1 infiltration and inflow ("I/I") reduction by a combination of on-site and off-site improvements.

During wet weather flow conditions, as a result of implementation of the Interceptor cleaning program, implementation of a reconstruction of the Interceptor at "A" Street and the implementation of a 2:1 "I/I" reduction, the wastewater flows from the Fan Pier/Pier 4 developments will not cause any increase in the number of combined sewer overflow events.

D. Hydraulic Analyses indicate that the only measurable effect on the Interceptor by a long-term areawide development to the year 2010 will occur along West First Street between "A" Street and "F" Street.

Within this length of the Interceptor the only impacted combined sewer overflow is located at the "D" Street intersection. During the 2010 peak dry weather flow condition, an increase in the depth of flow for this section of the Interceptor will amount to only approximately 3 inches. Such an increase in flow depth does not adversely impact the Interceptor and it will not cause a dry weather overflow to occur.

2. Local Sewerage System (Northern Avenue from Sleeper Street to Trilling Way through Commonwealth Flats to the Summer Street Pump Station to "E" Street to the North Branch of the South Boston Interceptor)

   A. The hydraulic analyses performed to determine the impact of the proposed Fan Pier/Pier 4 developments on this sewerage system are based upon (1). The Final EIR and supporting engineering documentation provided by the proponents' Engineer; (2). Current available data for all proposed development and (3). Flow assumptions for tributary developments (Refer to Paragraph 2D).

   B. The existing sewerage system on Northern Avenue from Sleeper Street to "B" Street is inadequate to handle the peak design flows from the Fan Pier/Pier 4 developments and other possible areawide developments for the year 2010. The proponents have committed to reconstruct the sewer in the Northern Avenue, as detailed in the Final EIR. The existing 18-inch sewer in Northern Avenue from "B" Street to Trilling Way also is unable to convey the projected peak 2010 sewage flows without surcharging the sewerage system. However, the 18-inch sewer can receive sewage from the Fan Pier/Pier 4 developments for some interim period which will be a function of the projects' construction progress. The proponents therefore plan to "temporarily" connect to this existing 18-inch sewer. Subsequently, the proponents will construct a 24-inch sewer through Massport property from "B" Street to Trilling Way when the BWSC and/or Massport indicates that the capacity of the existing 18-inch

sewer cannot accept the flows being generated from Fan Pier/Pier 4 in addition to future World Trade Center sewage flows. Ownership of this existing 18-inch sewer is in the process of being transferred to the BWSC from Massport. BWSC is awaiting confirmation from Massport concerning the granting of an easement for the construction of the 24-inch sewer. BWSC will coordinate with the proponents and Massport, where applicable, regarding the scheduling, sizing and the construction of the proposed sewerage systems presented in the final EIR and, in particular, the utilization and implementation of the "temporary" connection between existing and proposed sewerage systems.

C. The existing 30-inch sewer through Commonwealth Flats and the existing sewer along "E" Street each has a hydraulic capacity which very closely corresponds to the peak pumping capacity of the Summer Street Pump Station. This system can adequately handle the proposed 2010 areawide flows which will be transported through it. BWSC will closely coordinate other development proposals in the area tributary to this sewerage system to ensure that its capacity is not adversely impacted.

D. The existing Summer Street Pump Station has peak design capacity of 8.3 mgd. Based upon projected peak 2010 areawide sewage flow data, it appears that all of the proposed developments north of Congress Street would approximate this capacity. Consequently, BWSC is planning to convey all sewage flows from projects in the area bounded by Congress Street, Fort Point Channel, New Northern Avenue and "B" Street to the "A" Street sewerage system. Sewage flows from developments in the area north of the New Northern Avenue will be directed to the Summer Street Pump Station. The concept of such a sewerage system configuration was correctly presented in the Final EIR.

3. Storm Drainage System

   A. The proposed Fan Pier/Pier 4 site drainage will not impact any existing BWSC storm drainage collection system. However, the areawide drainage plans presented in the Final EIR will connect to drainage systems to be installed in the New Northern Avenue which is scheduled for construction in the near future. BWSC met with the State Department of Public Works on December 4, 1986 to initiate the coordination of planning for the storm drainage system to be built within the area. BWSC is awaiting the DPW's response to the comments which we presented at the meeting. We will continue to coordinate this issue with all concerned parties to assure that the proper storm drainage system is constructed as part of the DPW's construction. The Final EIR also indicates that the extension of the drainage system into the old Northern Avenue will be completed for the Fan Pier/Pier 4 developments. Therefore, BWSC will coordinate with the proponents regarding the construction of this system.

4. High Service and Low Service Water Supply Systems.

   A. Water supply to the Fan Pier/Pier 4 developments can be provided without adverse consequences to any of our existing customers. The proponents have agreed to upgrade the existing high service and low service water mains in Northern Avenue to assure that the water supply systems adjacent to their developments will be their optimum capacities. BWSC will coordinate with the proponents regarding the cleaning and cement lining of the existing 16-inch high service water main, construction of a new 12-inch low service water main and the relocation of portions of the existing 30-inch and 16-inch water mains in Northern Avenue which were detailed in the Final EIR.

   B. BWSC has received the commitment of the Fan Pier/Pier 4 proponents to investigate and utilize where feasible, methods of achiev-

ing water conservation which will not only meet but exceed those achieved in conventional devices as required under the State Plumbing Code.

C. Preliminary findings of an ongoing BWSC study have predicted that peak hour deficiencies at the extremities of the southern low service area, such as at Fan Pier/Pier 4, may occur by the year 2010. However, this situation is the result of existing deficiencies in the water supply system itself, and it will occur irrespective of whether Fan Pier/Pier 4 is developed. BWSC will be monitoring and if required, correcting this condition in the southern low system as part of its annual Capital Improvement Program.

D. Fire protection for the Fan Pier/Pier 4 developments must be supplied solely from either the high service or low service water systems, but never from a combination of both systems as was suggested in the final EIR.

5. General Comments

A. The BWSC will continue to coordinate with the Fan Pier/Pier 4 developers on all issues pertaining to the implementation of proposed sewerage, water and drainage systems presented in the Final EIR to ensure that the concerns of all affected parties are properly addressed. Such coordination will be accomplished as part of the site plan and sewer connection permit approval process, and such approval will be subject to the proper fulfillment of the requirements, rules and regulations of the BWSC. In the event it becomes necessary to adopt alternative configurations in lieu of the systems presented in this Final EIR, the proponents will be similarly required to address all of the concerns and requirements of the Boston Water and Sewer Commission.

B. As construction of the new Northern Avenue

Bridge project appears to be imminent, BWSC will coordinate with the the State DPW and all concerned parties the proper implementation of sewerage, water and drainage systems to assure that the ultimate systems are built as part of this project.

C. The BWSC will coordinate as required with federal, state, city, public and private agencies regarding the issue of funding and the extent of responsibility of each proponent for the implementation of the areawide sewerage, water and storm drainage systems presented in this Final EIR.

D. It is strongly urged that all future South Boston developments be required to adopt the same planning approach presented in this EIR, as part of their EIR's, to assure that all pertinent concerns are adequately addressed and that all BWSC master plans are properly updated. The Boston Water and Sewer Commission wants to emphasize that the system plans presented in this Final EIR are valid only as a starting point in planning for anticipated future development, and consequently must not be considered an approved master plan to be employed by other future projects.

The Fan Pier/Pier 4 developments are the beginning of an extensive development program planned within this section of South Boston. Consequently, it is extremely important that the concerted effort among all affected parties initiated by this EIR be maintained to ensure that all pertinent future concerns are properly addressed and that adverse impacts are prevented or mitigated.

Very truly yours,

Charles Button

Charles Button, P.E.
Chief Engineer

Cosentini Associates

CONSULTING ENGINEERS

44 Brattle Street, Cambridge, Mass. 02138

Telephone (617) 876-3830

Mechanical Engineer
William Lawrence

Partners
M. A. Mass, P. E.
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D. Michaeli, P. E.
D. Mozur, P. E.
A. Tinfo, P. E.
R. P. Leber, P. E.
D. C. Mass, P. E.
S. A. Quart, P. E.

January 15, 1987

Boston Water & Sewer Co.
10 Post Office Square
Boston, MA 02109

Attention: Charles Button, P.E.

Reference: Pier 4/Fan Pier

Gentlemen:

In our efforts to make the Fan Pier/Pier 4 Developments as environmentally responsible as possible we the mechanical design engineers are investigating ways in which we can go beyond the systems required in the building code to minimize water consumption and sanitary waste discharge from our projects.

Two basic systems will be investigated - the air conditioning systems, for reduction in water consumption, and the sanitary systems, for reductions in water usage and sanitary sewage generation.

The air conditioning systems proposed for the Pier 4/Fan Pier developments will utilize standard induced draft type evaporative cooling towers to provide the cooling medium for the building. Alternate type systems such as dry coolers, water conservation cooling towers (combination of evaporative cooling tower and dry cooler) and fluid coolers were considered in lieu of evaporative cooling towers for the project but were discounted because of the impact on architectural space requirements, structural loads and major increase in the overall electric energy consumption for the alternate cooling system. However, the following water conservation systems are being considered for the project.

1. Filer and Sand Separator; use of a water filtering system for the cooling tower water to reduce the amount of cooling tower bleed water.

Two Pennsylvania Plaza

717 North Harwood
Dallas, Texas 75201

303 East Wacker
Chicago, Ill. 6

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2. Side-Stream Water Softener; use of a water softener to allow the bleed water (normally dumped) to be recirculated.

3. Improve Water Treatment; use of a more sophisticated water treatment program to reduce bleed-water requirements.

The following fixture types will be investigated for possible project use:

Fixture	Code	Water Usage	Remarks
shower valve & head	3 GPM	2.75	1
lavatory private	not listed	0.05 GPM	
lavatory public metering	0.25 GPM	0.25 GPM	2
water closet tank private	3 G/flush	3 G/flush	3
water closet flush valve public	3½ G/flush	3 G/flush	
urinal FV public	1.5 G/flush	1 G/flush	
drinking fountains	not listed	8 G/hour	
kitchen sink private	not listed	0.05 GPM	1
bidet	not listed	0.05 GPM	1

1. With flow restrictor.

2. Any lower flow rate for this type of fixture would not provide proper operation and function of the fixture.

3. Alternate type water closet (tank type) will be investigated as the project design develops. Tank type water closet fixtures utilizing lower flow rates are presently on the market. Our research into the product availability (one gallon per flush) indicates marginal flushing action by the fixture. We will continue our review of products with lower flow rates during the development of the project and, if there is a change in the state-of-the-art for this type of fixture, we will consider it for this project.

Please note that, due to the number of buildings involved and the varying types of programming, variables controlling the selection of systems for construction may change from building to building across the site and even within segments of the same building.

We expect to be presenting information to you on the systems investigated and the reasons for the systems selected for construction at the time of our sewer study/site plan submittal. We would also welcome the opportunity to meet with you or your staff to discuss this issue in general or any specific recommendations you may have to aid us in reducing the impact of our projects on the water supply and/or sanitary sewer systems.

Cordially,

Frank G. Teebagy

cc: Ellen Watts
Andrew Boyd
Michael Lauber
Kevin Kerr
Lars Iversen

106/148

Parsons Brinckerhoff 100 YEARS

Parsons Brinckerhoff Quade & Douglas, Inc.
120 Boylston Street
Boston, MA 02116
617-426-7330

Engineers
Architects
Planners

March 13, 1987

Mr. John Hall
HBC Associates
600 Atlantic Avenue
Suite 2100
Boston, Massachusetts 02210

Ms. Ellen Watts
Boston Mariner Company
85 East India Row
Suite 41E
Boston, Massachusetts 02110

Dear Ellen and John:

This letter outlines our understanding of the Fan Pier and Pier 4 Developments impact on the Boston Edison Company's electrical distribution system in the Fort Point Channel/Commonwealth Flats area of South Boston.

Our discussions with Boston Edison Company engineering personnel have generated the following scenario for meeting the service requirements of the developments without adverse impact on any existing customers.

- The anticipated initial construction loads can be supplied from the existing distribution network in the Fort Point Channel area of South Boston.
- The permanent load for the developments will be supplied by a new distribution system in Congress Street, Sleeper Street, and existing Northern Avenue that will bring additional power from the Atlantic Avenue Substation into the area to meet the developments needs. This additional capacity will be available at the Atlantic Avenue substation do to the construction of a new substation, on Chatnam Street. This new substation will allow the transfer of enough load from the Atlantic Avenue substation to accommodate the anticipated loads from new development in the southern part of the Financial District as well as the Fan Pier and Pier 4 developments.
- The projected loads for the anticipated long term development in the area exceed the capacity of the existing substations and will require the construction of a local substation in this part of South Boston. Once this substation is on line, the Fan Pier and Pier 4 Developments service will be transferred from Atlantic Avenue to the new station.

At no point during the construction of the system required to support the proposed developments will service to adjacent areas of the City be adversely impacted. Once the anticipated long term system is in place the electric service in adjacent areas of the City of Boston will be enhanced as existing load is transferred to the new facilities.

Very truly yours,

PARSONS BRINCKERHOFF QUADE & DOUGLAS, INC.

Andrew B. Boyd

Andrew B. Boyd, P.E.
Project Manager

cc: R. Kaye (SOM)

A Century of Engineering Excellence

APPENDIX E

gas

Boston Gas Company
One Beacon Street
Boston Massachusetts 02103
Telephone (617) 742-8400

Walter J. Flaherty
Vice President
Marketing Public
Relations and Rates

RECEIVED

JAN 29 1987

OFFICE OF THE SECRETARY
OF ENVIRONMENTAL AFFAIRS

Mr. James Hoyte, Secretary
Commonwealth of Massachusetts
Executive Office of Environmental Affairs
100 Cambridge Street, 20th floor
Boston, MA 02202

RECEIVED

JAN 29

OFFICE OF THE SECRETARY OF
ENVIRONMENTAL AFFAIRS

January 28, 1987

Subject: Fan Pier and Pier 4 Developments

Dear Secreatry Hoyte:

Boston Gas Company has examined the Final Environmental Impact Report, EOEA #4426/4584, for the Fan Pier and Pier 4 Developments on the Fort Point channel. We strongly support and endorse these two exciting developments which we believe will be harbingers of continued major growth in the area.

Our proposed distribution system will have the capacity to service not only these developments but provide for all foreseeable development in the area. Surrounding communities will be positively impacted by the strengthened distribution system and all of our customers will benefit indirectly through lower prices from the added revenue generated.

We look forward to serving these outstanding additions to our city.

Sincerely,

W. J. Flaherty

Walter J. Flaherty

WJF:pl

APPENDIX F

Parsons Brinckerhoff 100 YEARS

Parsons Brinckerhoff Quade & Douglas, Inc.

Engineers
Architects
Planners

120 Boylston Street
Boston, MA 02116
617-426-7330

March 13, 1987

Mr. John Hall
HBC Associates
600 Atlantic Avenue
Suite 2100
Boston, Massachusetts 02210

Ms. Ellen Watts
Boston Mariner Company
85 East India Row
Suite 41E
Boston, Massachusetts 02110

Dear Ellen and John:

This letter outlines our understanding of the Fan Pier and Pier 4 Developments' impact on New England Telephone Company's telecommunications system in the Fort Point Channel/Commonwealth Flats area of South Boston.

New England Telephone Company (NET) has been upgrading its distribution system over the last several years in order to meet the telecommunications requirements of the new World Trade Center and in anticipation of the Fan Pier and Pier 4 Developments, as well as the expected long-term development in this area of South Boston. This effort has included: the construction of a satellite switching station in NET's existing facility on Congress Street; the construction of a fiber optic communications link between this facility and NET's main switching office downtown; and the construction of new conduit systems in Congress, Sleeper, Pittsburgh, Farnsworth, and B Streets in anticipation of the new street network proposed by the City.

NET is ready to meet the Fan Pier and Pier 4 Developments' needs by extending its telecommunication systems in any one of the streets previously mentioned. Although the long-term service planning anticipates all of these systems being available and interconnected to assure the most reliable service, the distribution system presently under construction will allow the upgrading of existing service to adjacent portions of the City and is planned to be implemented without disruption in service to any existing users.

Very truly yours,

PARSONS BRINCKERHOFF QUADE & DOUGLAS, INC.

Andrew B. Boyd

Andrew B. Boyd, P.E.
Project Manager

cc: R. Kaye (SOM)

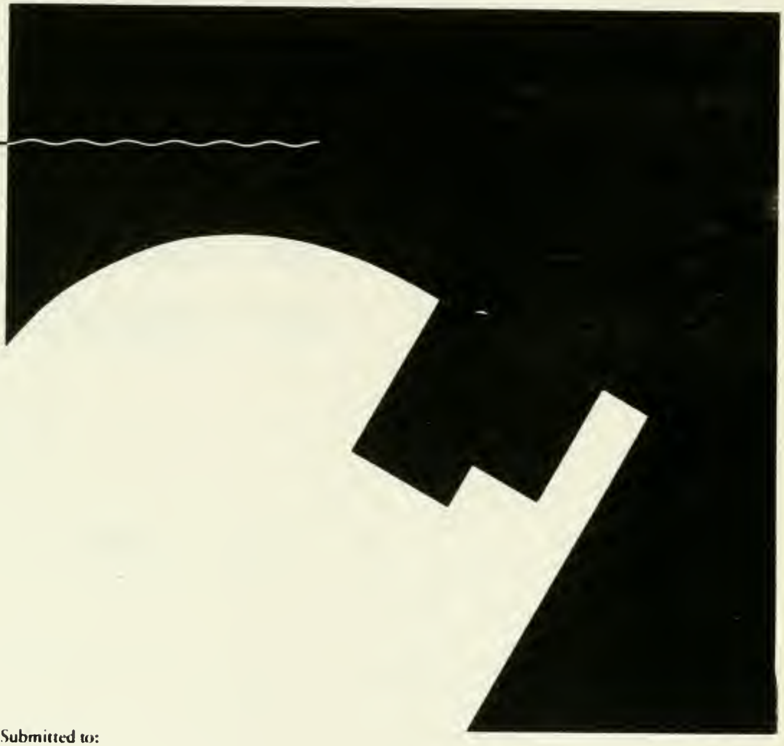
Project Benefits
Infrastructure

Supplementary Report Information

Project Benefits
Infrastructure

Fan
Pier
Development

Pier
4
Development



Submitted to:
The Boston Redevelopment Authority

Developers:
HBC Associates (Fan Pier)
The Boston Mariner Company (Pier 4)

March 23, 1987

[redacted]

SUPPLEMENTARY REPORT INFORMATION FOR FAN PIER/PIER 4

PROJECT BENEFITS REPORT
DATED MARCH 16, 1987

INFRASTRUCTURE REPORT
DATED MARCH 16, 1987

MARCH 23, 1987

TABLE OF CONTENTS

Item	Tab Number
Project Benefits Report dated March 16, 1987: substitute Page 3	1
Project Benefits Report dated March 16, 1987: substitute pages 15 and 16	2
Project Benefits Report dated March 16, 1987: substitute page 24	3
Infrastructure Report dated March 16, 1987: substitute pages 5 and 5A (Infrastructure Schedule)	4
Infrastructure Report dated March 16, 1987: additional letter to be added as Appendix G	5

TAB 1

Delete page 3 of the Fan Pier Development/Pier 4 Development Project Benefits Report dated March 16, 1987 and substitute therefor the following page 3.

SUMMARY

Fan Pier/Pier 4 developments will create 4.6-million sq. ft. of mixed-use space -- residential, office, hotels, retail space and a public cultural facility -- transforming a mostly vacant, publicly inaccessible and deteriorated area into a vital part of the City of Boston. This will be accomplished through unparalleled private investment. No project in Boston's history has provided greater public benefits.

Public Amenities

- Open Space - 15 acres; 60% of land area
- Harborwalk - 1-½ miles
- Canal, Waterfront Park, Harborpark Overlook, Pedestrian Plaza
- Marina
- Water transportation - public docking facilities
- Collaborative design by outstanding architects
- Improved water quality in Boston Harbor
- Traffic study, South Boston
- Water Transit Study

Housing

- Linkage - $15-million
- Market-rate housing - approximately 1,000 units
- Affordable housing - 100 units on-site plus assistance in creation of a substantial number of units off-site
- $2-million South Boston Neighborhood Stabilization Fund

Jobs

- 3,400 construction jobs
- 10,250 permanent jobs
- $3-million for job training
- Resident, minority and women hiring
- South Boston Job Stop

Taxes

- $18,000,000 in new real estate taxes
- $ 8,000,000 in new sales and retail taxes

Public Cultural Facility

- Developer donated building site on the Boston Harbor
- $3,000,000 in infrastructure improvements

Northern Avenue Corridor Planning

- On-going cooperation in area planning

TAB 2

Delete pages 15 and 16 of the Fan Pier Development/Pier 4 Development Project Benefits Report dated March 16, 1987 and substitute therefor the following pages 15 and 16.

Linkage Commitments

The two Developments will generate housing linkage payments equal to the following:

Fan Pier (2,145,757 square feet of linkage generating space)

Total linkage payments	$10,728,785

Pier 4 (941,819 square feet of linkage generating space)

Total linkage payments	$ 4,709,095

Total (3,087,576 square feet of linkage generating space)

Total linkage payments	$15,437,880

The Fan Pier/Pier 4 developers would designate that its linkage payments be made available to create affordable housing as follows:

On-Site Affordable - 100 Units

- 35% of the linkage payments from Fan Pier may be applied towards creation of the 100 units of affordable housing in Building F on Fan Pier, as described above.

Impact Area Affordable - Up to 150 Units

Fan Pier/Pier 4 enthusiastically supports the City's intention to assemble a housing site or sites in the impact area

on which up to 150 units of affordable housing for populations such as first-time home buyers, elderly, and/or artists. At the discretion of the BRA and the Housing Fund, portions of the Fan Pier/Pier 4 linkage funds will be made available to assist in the creation of these 150 affordable housing units on an adjoining or nearby site in the impact area.

Impact Area - Artists

- Fan Pier will contribute $20,000 to the BRA to be used to assist the artists' community in submitting an application requesting that a portion of the Fan Pier linkage funds be used to fund housing for the artists' community. It is anticipated that the BRA will assist the artists' community in locating a site for such housing to which a portion of the Fan Pier linkage funds may be directed.

Affordable Housing - City wide

- The balance of the Fan Pier/Pier 4 linkage payments would be contributed to the Neighborhood Housing Trust for creating affordable housing throughout the City. Actual locations and populations served by the foregoing would be the responsibility of the City and the BRA. At an average subsidy of $30,000 per unit, this linkage would generate approximately 250 new affordable units throughout the City.

TAB 3

Delete page 24 of the Fan Pier Development/Pier 4 Development Project Benefits Report dated March 16, 1987 and substitute therefor the following page 24.

Contribution Grant from Fan Pier will total approximately $2,145,757, while the Jobs Contribution Grant from Pier 4 will total approximately $941,819.

The developers have met with the Mayor's Office of Jobs and Community Services (OJCS) in order to discuss creative possibilities for applying these jobs linkage payments to projects of special interest to the impacted community. The developers are assured by OJCS that specific proposals for job training and outreach projects suggested by the Fan Pier/Pier 4 CAC will receive serious consideration.

OJCS will open model "Job Stop" offices this year; one of them will be in South Boston. This office will establish a clearinghouse for job training and employment opportunities, and promote job benefits for South Boston residents. The scheduled date for opening is July 1987. The Fan Pier and Pier 4 proponents have discussed the planned operation of the Job Stop office in anticipation of directing notice of job training and employment opportunities arising from the Fan Pier and Pier 4 hotels, offices, stores and restaurants, through this new City-sponsored program.

The Fan Pier developer expects that these job linkage funds will, among other things, support a pre-apprenticeship program to provide assistance to persons seeking to apply for union apprenticeship. In order to assure South Boston representation in this program, the Fan Pier developer intends to set up training

TAB 4

Delete page 5 (Infrastructure Schedule) of the Fan Pier Development/Pier 4 Development Infrastructure Report dated March 16, 1987 and substitute therefor the following pages 5 and 5A (Infrastructure Schedule).

BECO will be responsible for the planning, engineering, and construction of any modifications required to its system to meet the Fan Pier and Pier 4 Projects' needs. The costs of these efforts will be born by BECO in anticipation of revenue generated by the projects.

The Developers will work with BECO and the responsible agencies to coordinate construction of the proposed system modifications site and local roadway construction to ensure the availability of the required electric capacity and to minimize the impacts on traffic and existing services.

BECO has indicated that, through alterations to the existing system, BECO will be able to supply power to the area on an interim basis from either Atlantic Avenue or L Street Stations for construction of the Fan Pier and Pier 4 Projects and the first several load additions associated with the Developments. However, this load must be transferred to a new station in the Northern Avenue area, scheduled to be in service in 1993, which will be the source for the permanent loads of the Fan Pier and Pier 4 Developments as well as projected Fort Point Channel/Commonwealth Flats develoments.

■Gas System

On-site, the Developers are responsible for the planning, engineering, and construction of the gas system subject to the review and approval of Boston Gas.

Off-site, the Developers will continue their ongoing coordination effort with Boston Gas staff during the planning, engineering, and construction of distribution systems required to meet the Fan Pier and Pier 4 Developments' energy requirements (see Figure VI.2-20, in Chapter II of this report).

Boston Gas will be responsible for the planning, engineering and construction of any modifications required for its system to meet the needs of the Fan Pier and Pier 4 Projects. The cost of these efforts will be born by Boston Gas in anticipation of revenue generated by the projects.

The Boston Gas Company, in anticipation of the necessity to increase its existing gas supply capability, has upgraded its service to the B Street/Northern Avenue intersection by slip lining the 12-inch main and interconnecting this line with their 16-inch intermediate pressure line in Northern Avenue. This will allow the extension of the intermediate pressure line to meet the Fan Pier and Pier 4 Development service requirements. This also relieves the load presently on the low pressure gas system and should improve the ability to meet other areawide load demands on that system.

The Developers will work with Boston Gas and the responsible agencies to coordinate the construction of the proposed system modifications with site and local roadway construction to ensure the availability of the required gas capacity and to minimize the impacts on traffic and existing service.

TAB 5

Add the following letter dated
March 19, 1987 from G.R. Sullivan
to Stephen F. Coyle as Appendix G
of the Fan Pier Development/
Pier 4 Development Infrastructure
Report dated March 16, 1987.

BOSTON EDISON
800 Boylston Street
Boston, Massachusetts 02199

APPENDIX G

March 19, 1987

Mr. Stephen F. Coyle, Director
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201

Dear Mr. Coyle,

SUBJECT: Boston Edison Company comments on Report - Infrastructure for Fan Pier/Pier 4 Developments

We have reviewed the Fan Pier/Pier 4 Infrastructure Report dated March 16, 1987 and submitted to the Boston Redevelopment Authority. It is our understanding, following further meetings with the developers on March 18, 1987, that the intent of the first paragraph on Page 5 (Infrastructure Schedule) of the report is as stated on page VI.2-33 of the report. Page VI.2-33 acknowledges that the existing electric supply in the Fort Point Channel area will need to be augmented to support the Fan Pier and Pier 4 developments as well as the other projected development in the area.

We expect that through alterations to the existing system, we will be able to supply power to the area on an interim basis from either Atlantic Avenue or "L" Street Stations for construction of the project and the first several load additions associated with the developments. However; this load must be transferred to a new station in the Northern Avenue area, scheduled to be in service in 1993, which will be the source for the total permanent loads of the Fan Pier/Pier 4 developments as well as projected Fort Point Channel/Commonwealth Flats developments.

Very truly yours,

Gregory R Sullivan

G. R. Sullivan
Manager, Distribution & Planning Section
Electrical Engineering & Station
Operations Department

GRS/jfi

cc: Mr. John Q. Hall: HBC Associates
Ms. Ellen A. Watts: Boston Mariner Co., Inc.
Mr. Peter Diana: Hale & Dorr
Mr. Andrew Boyd: Parsons, Brinckerhoff, Quade & Douglas
Mr. C. B. Damrell

EXHIBIT ___

Northern Avenue Corridor

(To Be Supplied)

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